Guidance Document

Regional Reservoir & Water Supply Program:

Regional Water Supply Planning and Implementation Process

Prepared for

Georgia Department of Natural Resources

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Purpose

The purpose of this document is to provide guidance on the specific elements that must be addressed in the development of water supplies and related resources in order to assure that regional water supply projects are both environmentally and economically sound. Further, this guidance is designed to:

- Provide a framework to assure that the public's rights are protected.
- Increase communication and understanding so that alternatives that are socially or environmentally unacceptable are eliminated.
- Reduce the risk of conflicts emerging late in the development of water supply projects.
- Provide information that will be useful in meeting schedules and lowering overall costs associated with these projects.

Failure to follow this guidance may result in time and financial resources being spent on a project that is not viable in the current social and regulatory setting. Projects that are sponsored or supported by the Regional Reservoir and Water Supply Program (RRWSP) must adhere to these guidelines.

Water Supply Planning and Development in Georgia

Water supplies in Georgia are generally provided locally, either by city or county governments. More regional facilities, serving multiple governmental jurisdictions, also serve Georgia's needs in many locations. Regional facilities may be sponsored through coordination between local governments (e.g., Bear Creek Reservoir, serving Clarke, Barrow, Jackson, and Oconee Counties) or through the creation of Water Authorities by the State or County legislature. The Federal government also has constructed a number of large reservoirs across the state that provide significant regional water supplies.

Water supplies are defined as: (1) domestic water supplies, those serving rural domestic needs; (2) municipal water supplies, those serving communities of 50 or more houses providing water for domestic, commercial, and some industrial use; and (3) industrial water supplies, those owned and operated by industry.

Local governments appreciate the economies of scale that exist in water supply production and delivery, and efforts are made to secure a supply source large enough to serve surrounding areas and take advantage of these benefits of scale. However, the service area is often limited, not by the potential of the resource, but by financial and political obstacles. This results in failure to realize the full economic benefits of regional facilities, inefficient use of the resource, and negative environmental implications. As supplies become scarce, business opportunities also become limited, depressing local economies. The RRWSP was an effort by the State to create a regional water supply

program that would eliminate financial and political obstacles and result in a more secure water supply for the state.

Regional Reservoir & Water Supply Program

The RRWSP was created in response to the passage of the Water Supply Act, effective April 18, 1989 as Official Code of Georgia, Annotated (O.C.G.A.) Section 12-5-470 through 482. The Act authorized the Georgia Department of Natural Resources (GA DNR) through the RRWSP to initiate water supply projects, to supplement current community needs in the event of prolonged drought, and to promote the use of projects for public benefit. The RRWSP is authorized to acquire lands for water supply projects, compensate for any adverse environmental impacts, and manage the projects in coordination with Regional Development Centers (RDCs), local advisory boards, and various State and Federal regulatory agencies and organizations. RRWSP staff also work with local governments and regional authorities to provide technical support and oversight for local water supply initiatives. In addition, the RRWSP performs studies of water resources for state water supply planning purposes.

When the RRWSP was initiated, north Georgia was the area of fastest population growth in the state, and due to the geology of north Georgia, reservoirs were usually the best option for regional supply. Therefore, for most of its history, the RRWSP has concentrated its efforts on the water supply needs of north Georgia, through State sponsorship of the construction of reservoirs. However, water supply needs are now developing all across Georgia, and reservoirs are not always the best solution to meet these needs. As a result, the scope of the program has been broadened to consider water supply concerns over the entire state and to be more inclusive of options beyond reservoirs to meet water supply needs.

Designation of "Regional"

Within the context of this program, a "regional" water supply project is loosely defined as one that has a service area covering multiple governmental jurisdictions and that will serve the needs within that service area for at least the next 30 years.

For planning and resource management purposes, "regional" should be considered in terms of the potential area of influence for that project, and may extend well beyond the footprint of the project. The area of influence must be ascertained on a case-by-case basis, and will be designated in a formal public participation plan (See Part 1: Public Participation Plan of this document). In addition, the project should be considered in conjunction with other current multi-county plans, such as those created within the Metropolitan North Georgia Water Planning District (District) or the appropriate River Basin Management Plan.

It is important that water supply development and management be as efficient as possible, allowing for Georgia's many diverse needs to be fully met. Planning and development of supply sources within a regional framework provides environmental and economic benefits that are numerous and significant:

- Improves equity – Regional management provides opportunities for all counties within the region to have their interests represented in discussions of resource allocation or regional impact. This is especially true if the resource is generally confined within the boundaries of the region, for example if regions are defined on a watershed basis.

- Promotes economic and environmental sustainability - Regional water plans can be coordinated with local comprehensive plans that address growth strategies for that region, recognizing the apparent limits of resources as defined by the Georgia Environmental Protection Division (GA EPD). As limits are approached, innovative strategies to increase supply may be identified or strategies for reducing demand may be adopted, both of which allow continued economic development to the extent desired by the community. This is a proactive approach to maintaining a healthy environment, which is more cost-effective than trying to repair damage retroactively.

- Increases potential for economic development – Regional management allows pooling of financial resources within the region. This allows those regions or counties that would be excluded because of financial limitations to provide adequate water supplies for development, if the region so wishes. Raising the level of economic prosperity for any part benefits all members within the region.

- Lowers capital costs – Regional management allows water and related infrastructure resources to be shared more efficiently. Reducing unnecessary duplication of infrastructure lowers capital costs.

- Lowers management costs – Reducing infrastructure, in turn, reduces repair costs and streamlines management of that infrastructure.

- Reduces cumulative impacts – Reducing infrastructure results in a reduced impact to the environment. In addition, a regional perspective aids in identifying distant, delayed, or additive environmental impacts associated with a seemingly insignificant action.

- Improves site selection – Since infrastructure facilities will serve regional needs, more locations will be available that meet the project criteria. Therefore, site selection can be more environmentally protective. For example, adequate site selection alternatives are critical for siting reservoirs facilities.

- Promotes local control – Regional management, which actively solicits public participation, allows citizens to participate in their economic and environmental future.

- Supports State's resource management role – Regional management does not preclude State oversight, but instead supports the State's efforts to encourage economic development and advance environmental protection.

Guiding Principles

The goal for water supply projects sponsored or supported by the RRWSP is to assure reliable, safe drinking water for citizens of Georgia. However, this must be accomplished

while maintaining an equal commitment to the parallel goals of environmental stewardship and fiscal responsibility. Achieving a balance among these, at times, divergent goals can be accomplished by adhering to three principles, which focus and guide the work:

1. Public Participation – Solicitation of public input into every aspect of the project results in projects that are of higher quality and serve the needs of more people. In addition, public scrutiny is useful in ensuring that the goals of the project are consistent with goals that have already received public agreement.

   As issues are raised during the planning and implementation of water supply projects, decision-makers will:

   - Acknowledge that their decisions affect the entire population of their region;
   - Recognize that their decisions will impact future generations, and that those generations have inherent rights;
   - Recognize that all people have a right to a livelihood and as far as possible to a stable, protective, and unthreatening environment;
   - Respect the fact that actions taken within their jurisdiction should not lead to the harm of others outside their jurisdiction;
   - Ensure that, before decisions are made, those who could be adversely affected have an opportunity to engage in informed dialogue and that decisions are enacted consistent with appropriate due process;
   - Ensure that actions taken within their jurisdiction will protect the ecosystem.

2. Public Service – The RRWSP is funded by the citizens of Georgia to serve the needs of the citizens of Georgia. Therefore, only projects that forward this objective will be considered for sponsorship or support by the RRWSP.

3. Sound Science – All decision-making will be based on peer-reviewed and accepted scientific information. Although some criteria are subjective and not amenable to quantification, a process that, to the maximum extent possible, is fact-based will allow stakeholders to more realistically assess the pros and cons of an action.

Program Elements

For any project, there are four elements that must be addressed appropriately in order to fulfill the goals of the RRWSP, and thus be supported or sponsored by the RRWSP. These are:

- Public Participation Planning
- Regional Water Supply Planning
- Regional Water Conservation Planning and Implementation
- Environmental Quality Procedures for Regional Water Supply Implementation

Public Participation Plan - critical to assuring that the outcome of any planning and subsequent implementation is appropriate and representative of all citizens. This is a formal, documented plan that is created at the initiation of the process. The process begins when a group, consisting of those authorized by public consent to make decisions regarding water supply, begin either formal or informal discussions regarding water supply options. The process is complete when the water supply project, as defined within the public participation plan, is completed.

Regional Water Supply Planning - required to assure that both short- and long-term needs are identified for a region, and as a result, the best practicable alternative(s) for meeting current and future water supply needs are selected. In addition, planning encourages coordination between local governments, which is necessary to secure appropriate land use controls and efficiency in use of resources. Included in this section are requirements for adequate assessment of need for current and future water supplies, local and regional comprehensive planning programs (as required under the 1989 Georgia Planning Act), and an adequate assessment of alternatives and associated costs for meeting the water supply need. The alternatives analysis is an iterative process, the results of which are re-evaluated during project implementation as environmental studies proceed and new information is acquired.

Regional Water Conservation Planning and Implementation - promotes environmental stewardship and also encourages efficient use of water so that the multiple demands placed on the resource can be met. Efficient current water use is a requirement of the program, as are on-going efforts to reduce future water demand through conservation. The potential for aggressive conservation to serve as an alternative to other supply sources is considered.

Regional Water Supply Project Permitting and Implementation – initiated if, based on the results of the water supply planning process and public input, a water supply shortfall exists. The economic, social, and ecosystem impacts of the project must be quantified wherever possible, so that all of the costs and benefits of the alternatives under consideration are clearly identified and integrated into the decision-making process.

Part 1: Public Participation Program

1.1 Public Participation Process

The State of Georgia recognizes that public participation plays a crucial role in assuring that all stakeholders can effectively take part in decisions that affect their lives. To facilitate such public participation, a formal, written process is recommended that identifies at a minimum the scope of the project under consideration, the local sponsors of the project, the stakeholders potentially affected by the project, and the potential effects of the project, as well as the efforts that will be undertaken to elicit public participation. An outline of the minimum requirements for an acceptable public participation plan is included as Attachment A.

The following core values and guiding principles for public participation have been incorporated from Interact: The Journal of Public Participation, Volume 2, Number 1, Spring 1996.

1. People should participate in decisions about actions that affect their lives.
2. Public participation implies that the public's contribution will have some influence on the decision.
3. The public participation process communicates the interests and meets the process needs of all participants.
4. The public participation process seeks out and facilitates the involvement of those potentially affected.
5. The public participation process involves participants in defining how they participate.
6. The public participation process communicates to participants how their input was, or was not, utilized.
7. The public participation process provides participants with the information they need to participate in a meaningful way.

Regional water supply planning and development requires a thorough and comprehensive public involvement program. The public involvement plan will be developed at the initiation of the planning process and continued through the implementation stages until the project is complete.

Public involvement programs can vary in scope and cost but include, at a minimum, an opportunity for the public to participate in all the key stages of the project. These key stages for public input include:

- At the initiation of the water supply planning phase, public input will be solicited to identify local interest and concerns about future water supply needs and options for meeting these needs. This milestone may coincide with the scoping phase of an EA/EIS, if one is required.
- After the water supply needs analysis has been completed, the public will have the opportunity to review the projections for population and employment, water conservation measures and levels, and projected per capita water use numbers.
- When the preliminary alternatives to meet water supply needs have been identified and the initial environmental studies have been completed, there will be an opportunity for the public and local stakeholders to discuss their potential concerns about specific alternatives.
- Finally, after the best practicable alternative is chosen, the public will have the opportunity to suggest additional modifications to the project. This comment period may coincide with a request for a permit (an activity which often requires solicitation of public input) to implement the chosen alternative.

1.2 Program Elements

The necessary elements of a formal, written public participation plan are discussed below and are based on recommendations for public participation developed by the National Environmental Justice Advisory Council (NEJAC). The NEJAC is a federal advisory committee established to provide recommendations to the Environmental Protection Agency (EPA) on matters pertaining to environmental justice. Four core elements are identified as critical for effective public participation. These elements are: preparation, participants, logistics, and mechanics.

1.2.1 Preparation

Developing co-sponsoring and co-planning relationships with community organizations is essential to successful community meetings. Education of the community regarding the key issues surrounding the project is emphasized to assure that this input is relevant. The project sponsor will provide to community participants the resources they need to effectively influence decision-making as it affects their health, property, and quality of life.

In order to initiate communication, the local sponsors will advertise a planning meeting at least 2 weeks prior to the meeting. The time and place of the planning meeting and a brief description of the proposed project (i.e., water supply planning and the area of service) will be included in the public notice. The notice will be placed in the local newspaper and on the GA DNR website. In addition, at least one representative from each local government and RDC potentially affected, and at least one representative from a local environmental organization, will be invited to the initial planning meeting.

At the initial planning meeting, participants who will be affected by the project will be identified; the local sponsor will subsequently notify them of the next planning meeting. At the next meeting, the scope of the proposed activities will be described, and logistics

(described below) of public participation will be outlined to the extent possible given the early stage of the project. This information will be formalized into a written public participation plan. It is anticipated that the plan will be modified as the project matures and will be used to document the status of the project over time. All meetings will be publicized in the local newspaper at least 1 week prior to the meeting.

1.2.2 Participants

The following groups or communities will be included in the decision-making process:

- Community and neighborhood groups
- Community service organizations
- Educational institutions
- Environmental organizations
- Government agencies
- Industry and business groups
- Non-government organizations
- Religious/ Spiritual communities
- GA DNR Commissioner, or their designee (required by Rule, O.C.G.A. 12-5-479)
- Chief Executive Officers from local governments within the proposed project service area or their designee (required by Rule, O.C.G.A. 12-5-479)
- RDC within the proposed project service area

It is important that a core group of stakeholders be consistent throughout the project. However, the exact composition of the stakeholder group may change with each stage of the project. As the project evolves, stakeholders may consider issues in a different context, and issues may become more or less important. In addition, informational needs may change, requiring different expertise within the stakeholder group. This stakeholder group, as outlined above, meets the requirements of the Water Supply Act (12-5-479) for Project Water Users Advisory Council and Project Site Control Advisory Council.

Responsibilities of Participants

It is the responsibility of the sponsor initiating the water supply discussions to create an appropriate public participation plan. However, stakeholders will participate in the creation of this plan to assure that the plan is appropriate.

1.2.3 Logistics

The Public Participation Plan will detail the logistics (where, when, and how) of communication. Meetings will be made accessible to all who wish to attend, with

technologies used to allow more effective communication. For example, meeting notices and/or meeting content could be transmitted via email so that limitations on participation due to transportation issues or work schedules could be eliminated.

All vehicles for communication, whether via actual or virtual meetings, posters, exhibits, workshops, etc., will be conducted in an atmosphere of equal partnership, where all stakeholders feel free to share their perspective and experience. The sponsor and stakeholders will share leadership and presentation of information. Language and cultural barriers, technological background, and literacy will be considered so that effective information exchange can be maintained.

1.2.4 Mechanics

The overall goal of the Public Participation Plan is to assure that information is conveyed in a timely and appropriate way to stakeholders, and that as a result, they can effectively participate as decision-makers. This goal, which must be met throughout the process, provides a framework for all dialogue and the Public Participation Plan.

Part 2: Regional Water Supply Planning

The State of Georgia encourages, and in many cases requires, local governments and water users to perform water supply planning. This section provides a summary of those planning recommendations or requirements that are currently incorporated in State regulations. The RRWSP further recommends that water supply planning within each of these ongoing planning efforts be coordinated into a Regional Water Supply Plan so that efficiencies of scale are achieved with regard to water usage, and economies of scale are achieved with regard to project costs.

2.1 General Comprehensive Planning

2.1.1 Local and Regional Comprehensive Plan

In 1989, the Georgia General Assembly passed the Georgia Planning Act (O.C.G.A. Section 50-8-1 et. seq.), which established a coordinated planning program for the State of Georgia. This program provides local governments with opportunities to plan for their future and to improve communication with their neighboring governments. The Planning Act also assigns local governments certain minimum responsibilities to maintain "Qualified Local Government" (QLG) status and, thus, be eligible to receive certain state funding, including funds related to water supply projects. The Department of Community Affairs (DCA) determines local government status. O.C.G.A. Section 50-8-2(G)(18) defines a "Qualified Local Government" as a county or municipality which:

- Has a comprehensive plan in conformity with the minimum standards and procedures;
- Has established regulations consistent with its comprehensive plan and with the minimum standards and procedures; and
- Has not failed to participate in the department's (Department of Community Affairs) mediation or other means of resolving conflicts in a manner that, in the judgment of the department, reflects a good faith effort to resolve any conflict.

Minimum local planning standards have been developed to guide local governments in developing and implementing their comprehensive plans (Chapter 110-12-1). Six topical planning elements have been established and must be included in all local comprehensive plans: population, economic development, natural and historic resources, community facilities and services, housing, and land use. Any strategies developed by local governments for the protection of certain natural resources (water supply watersheds, groundwater recharge areas, wetlands, protected mountains, protected river corridors, and coastal resources) must specifically reference GA DNR's Rules for Environmental Planning Criteria (see Part 4: Regional Water Supply Project Permitting and Implementation of this document).

Under the rules of the Planning Act, development projects that are of sufficient size to have an impact beyond a local government's jurisdiction, such as a regional water supply project, are subject to review as Developments of Regional Impact (DRI) (Chapter 110-12-3). This review is intended to improve communication among governments on large-

scale developments and to provide a means of identifying and assessing potential development impacts before conflicts arise. The RDC, with input from neighboring local governments, will review the water supply project, assess the impacts of the project on the region, and determine whether (and to what extent) the project forwards the goals of the region, as indicated in Local and Regional Comprehensive Plans. After review is completed, the local governments retain the authority to make the final decision on whether or not to go forward with the project. If the project is in conflict with the stated goals of the region, the project must be modified so that the conflict is mitigated.

2.1.2 Service Delivery Strategy

In 1997 the Georgia General Assembly passed the Local Government Services Delivery Strategy Act (O.C.G.A. 36-70-1 et. seq.; HB 489). The intent of the Act is to:

- Provide a flexible framework for local governments and authorities to agree on a plan for delivering services efficiently, effectively, and responsively
- Minimize duplication of effort and competition among local governments and authorities providing local services
- Provide a method to resolve disputes among service providers regarding service delivery, funding equity, and land use

Consistent with O.C.G.A. 36-70-27, in order to be eligible for state funding of a regional water supply project, all local governments within the project service area must be included in a DCA-approved Service Delivery Strategy. The Strategy must reflect the potential effects of the project on current services.

2.2 Water Resource Planning

2.2.1 Regional Water and Wastewater Master Plan

Applicants for a water withdrawal permit must prepare a plan that relates current water withdrawal/water plants to the new withdrawal application. The application must contain a discussion of all possible water supply sources used for current and future needs; such sources may involve groundwater and surface water, as well as other techniques designed to enhance, sustain, or optimize these naturally occurring sources. A discussion of water supply alternatives and recommended guidance for properly evaluating alternatives are provided below in Section 2.4. Current and future wastewater treatment plant capacity and service area must also be addressed within this plan. This plan must reflect a coordinated effort between all appropriate political entities within the service area and the State, and must address water allocation between these entities. The time frame of the plan is the same as the water demand projections provided to the State as documentation of need. This requirement is consistent with Georgia's Service Delivery Strategy, Counties' Comprehensive Plans, Southeast Georgia 24-County Comprehensive Water Supply Management Plans, and GA EPD withdrawal permitting conditions.

2.2.2 Drought Contingency Plan

Applicants for a new water withdrawal permit must create a regional plan, coordinated between local governments, that meets the requirements for Drought Contingency

Planning (DCP). The DCP measures must include prioritization of potable water uses, drought severity criteria (such as low stream flows and reduced reservoir pool elevation), and range of water use restrictions, based on the severity of the drought. The DCP is a prerequisite for GA EPD approval of the water withdrawal permit.

2.2.3 Source Water Protection

The 1996 amendments to the Safe Drinking Water Act emphasize protecting surface- and groundwater sources used for public drinking water supply. In order to accomplish this goal in an efficient and cost-effective manner, GA EPD requires that applicants prepare a Watershed Protection Plan prior to approval of the water withdrawal permit. This plan requires consideration of water, land, and human activities in an integrated framework, and must meet the requirements of the Rules for Environmental Planning Criteria (Chapter 391-3-16). A Watershed Protection Plan may include establishing local ordinances for stormwater management, zoning, stream buffers, and subdivision development, codes to control erosion, options for transportation, and limitations on impervious surfaces.

2.3 Water Supply Needs Analysis

An important step in water supply planning is the development of sound water supply demand projections and resulting water supply needs. Previously, local projects have often been delayed during the permitting and implementation processes due to inadequate project justification. One of the primary goals of the GA DNR is for this process to provide a framework for conducting water supply planning to ensure that an unbiased and defensible Water Supply Needs Analysis is performed before the initial selection of a water supply alternative. Water supply needs will be based on careful evaluation of potential water demand reductions through active and passive conservation measures.

2.3.1 Population and Employment Projections

Accurate population and associated employment projections are the basis for the development of future water demands. Projections for the chosen planning horizon are developed using data available from affected jurisdictions, supplemented by regional and national projections of economic growth and population distributions. In order to expedite the approval process, the methodology will be based on proven techniques to arrive at these projections.

The process will begin with the identification of a feasible water supply planning area for the proposed regional water supply project. Once local project participants and GA DNR agree upon the planning area, the protocol for population and employment projections must be submitted for review to the RDCs located within the proposed service area and to the GA EPD or other appropriate state agency or agency division, as established by the Georgia legislature. Draft population and employment projections must also be reviewed with local stakeholders, planners, and utilities. A series of three growth projections (low, medium, and high) that reflect different possible scenarios for regional economic development and associated land use patterns will be prepared for evaluation.

2.3.2 Water Use Rates, Conservation, and Demand Projections

A careful evaluation of existing versus future water conservation measures must be completed to determine reasonable water use rates throughout the planning horizon. For example, implementation of new plumbing codes and replacement of existing appliances (washing machines, dishwashers, etc.) with more efficient machines reduce per capita use rates in the near future. Additional innovations in irrigation equipment also reduce water use for outdoor purposes. In general, calibration of base water use rates, as well as projections of potential conservation savings, must be supported by reference to recently developed data on water use patterns by end-use (Mayer et al, 1999), per capita, and by land uses.

These data must then be incorporated into water demand forecasting models using proven techniques, such as the one being used for development of water supply needs for the District study of the 16 metropolitan Atlanta counties. These models are calibrated by applying water end-use estimates to existing population and employment by County or sub-region and then reconciling to available summary statistics on water demands. Summary data must be separated by customer classification and/or land use to ensure that input water use rates are within the range of values identified in national research on water demand patterns.

Once the model to be used is calibrated using inputs and assumptions about projected changes in population, employment, and land use patterns, projections of water demands by County or sub-region may be developed. This enables consideration of the impacts of building plumbing codes, changes in land use patterns, and alternative pricing and programmatic approaches to water conservation over the planning horizon. National research on water use reductions associated with various programmatic approaches to water conservation provides a valuable database for projection of water conservation impacts. **Water demand reductions due to implementation of water conservation measures must meet or exceed that amount recommended under the Regional Water Conservation Plan.**

Before the future demand projections are completed, recommended unadjusted, and conservation-reduced, per capita water use rates will be confirmed with GA EPD and local planning agency staff (RDCs, GA DNR Water Conservation Coordinator, RRWSP Coordinator, and the regional water authority [if applicable]). Demand projections will be developed on an annual basis for the planning horizon based on the approved population and employment projections and per capita use rates.

2.3.3 Evaluation of Currently Available Supply

The existing water supply available within the planning area must be identified and documented, both in tabular format and through the development of sub-regional or county maps. A review of existing utility capacities will be completed as well as an estimate of the number of homes that are self-supplied (utilize wells for potable water).

2.3.4 Development of Future Water Supply Needs

Future water supply needs will be based on the comparison of future demands and available supply under alternative assumptions related to projected economic growth, associated water demands, and conservation initiative impacts. The difference between the demand and available supply, within given timeframes, is the amount of additional water supply that will be required to meet local and regional needs. Future water supply needs can then be used to identify potential water supply alternatives.

2.4 Analysis of Alternatives

If it is clear based on the water supply needs analysis of the service area that a water supply shortfall exists, the project sponsor must examine all practicable methods of obtaining the desired water supply. An exhaustive analysis of water supply alternatives is generally required in order to support the alternative chosen. Alternatives analyzed will include alternate water sources (i.e., surface water, groundwater, or other appropriate naturally occurring sources) and other techniques to enhance, sustain, or optimize the naturally occurring sources (e.g., water conservation, use of reclaimed water, water supply systems interconnections, artificial recharge and aquifer storage recovery, or other emerging technologies) to meet water supply needs, and possibly alternate locations. To properly select among alternatives, the selection process must occur in the planning phase, before the project is developed or designed. Recommended guidance for properly evaluating alternatives is provided by the US Army Corps of Engineers (USACE) guidance document of September 2002 (Attachment B).

2.4.1 Analysis of Alternatives under the Clean Water Act (CWA)

Water supply projects that result in impacts to “waters of the State” must comply with the requirements of the CWA Section 404(b)(1). The term "waters of the United States" has broad meaning and incorporates both deepwater aquatic habitats and special aquatic sites, including wetlands. 40 Code of Federal Regulations (CFR) 230.10(a) specifies that:

> …no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences (40 CFR 230.10(a)).

The project sponsor is required in every case to evaluate opportunities for use of alternative water sources (including water conservation) or the use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem. This evaluation is required regardless of whether the discharge is to a special aquatic site or whether the activity associated with the discharge is water-dependent. The USACE, the lead permitting agency, will not issue a permit where a less environmentally damaging practicable alternative for the proposed discharge can be demonstrated. Practicable alternatives are defined as alternatives that are:

> …available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (40 CFR 230.10(a)(2)).

To demonstrate compliance with the Section 404(b)(1) guidelines, the applicant must bear the burden of proof. If proof is lacking, the Section 404(b)(1) guidelines require that no permit be issued (40 CFR 230.12(a)(3)(iv)). Proper evaluation under the Water Supply Needs Analysis will satisfy much of the analysis of alternatives required under Section 404(b)(1) of the CWA.

2.4.2 Analysis of Alternatives under the NEPA/GEPA

The USACE must comply with NEPA in the issuance of a federal permit (CFR 1508.18(b)(4)). NEPA regulations require examination of all reasonable alternatives to the proposed action, including a "No Action" alternative (40 CFR 1502.14). Water supply projects sponsored by the State also require compliance with the Georgia Environmental Protection Act (GEPA) (O.C.G.A. 12-16). Analysis of alternatives under GEPA is the same as that under NEPA.

In determining the range of alternatives to be considered, the emphasis is on what is "reasonable" rather than whether the applicant favors or is capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant. Even alternatives outside the legal jurisdiction of the lead agency must be analyzed if they are reasonable. Potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered (40 CFR 1506.2(d)).

The range of alternatives under NEPA analysis includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them (40 CFR 1502.14). Alternatives beyond the range of alternatives discussed in relevant environmental documents cannot be considered, but all the alternatives discussed in such documents must be considered (40 CFR 1505.1(e)).

For water supply projects in Georgia, "no action" means the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity and/or alternative actions. Each alternative must receive essentially the same degree of analysis, ensuring that all considered alternatives are evaluated equally with the proposed action (40 CFR 1502.14(b)). NEPA does not dictate an amount of information to be provided, but prescribes a level of treatment, which may require varying amounts of information. During the Water Supply Needs Analysis, some reasonable alternatives may be eliminated from further consideration because the analysis demonstrates that these options do not satisfy the water supply needs. Further analysis of alternatives can be streamlined by developing an approach that melds the CWA Section 404(b)(1) and NEPA analysis of alternatives into a single process.

For projects, such as regional water supply reservoirs, that do not qualify for a general permit (i.e., regional or nationwide permit), USACE is authorized to request that the applicant develop either an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) to complete NEPA compliance.

Part 3: Regional Water Conservation Planning and Implementation

As part of the RRWSP, demonstration of regional water use efficiency is a pre-requisite for sponsorship or support of new water supply projects, such as regional reservoirs. Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources. The efficient use of water can also prevent pollution by reducing wastewater flows, recycling industrial process water, reclaiming wastewater, and using less energy. In addition, efficient use of current water resources may improve the use and extend the life of existing facilities, thereby postponing, downsizing, or even eliminating the need for additional capital-intensive water supply projects.

This water conservation imperative has been reflected in recent local and state policy statements and actions. For example, in December 1999, the Association of County Commissioners in Georgia (ACCG) in concert with the Georgia Municipal Association (GMA), released the guidance, *Georgia Water Resource Policy: A Call for Action*. In May 2001, the General Assembly passed SB 130 establishing the Metropolitan North Georgia Water Planning District (District). Additionally, in May 2001 the GA DNR Board released the *Water Issues White Paper*, which includes a discussion of statewide water conservation needs. Georgia has specified the need for water conservation and, in the O.C.G.A., Section 12-5-474(c), requires preparation of a water conservation plan for use of any water supply facilities. Finally, the GA EPD has established water conservation requirements for surface- (Chapter 391-3-6-.07) and groundwater (Chapter 391-3-2-.04(11)) withdrawals.

In order to meet the needs of existing and future populations and ensure that habitats and ecosystems are protected, the nation's water must be sustainable and renewable. Sound water resource management, which emphasizes careful, efficient use of water, is essential to achieve these objectives. The water conservation initiative of the RRWSP requires:

- Water use information from a cross-section of regions in the study area;
- A general assessment of conservation potential, given exhibited water demand characteristics; and
- Implementation of various water conservation efforts.

It is assumed that some level of water conservation is ongoing by all water suppliers and water withdrawal permit holders within a region. In addition, there may be conservation efforts undertaken by the cities and counties that would be included within the service area. The State Water Conservation Coordinator will review these conservation measures and assess their adequacy in fulfilling the intent of managing water efficiently for that area. If these measures are considered inadequate, a water conservation initiative will be required. An initiative that fulfills this intent is outlined in the following sections. This process, illustrated in Figure 1, offers guidance on how a comprehensive, sustainable, and

effective water conservation program may be developed and implemented at the regional level.

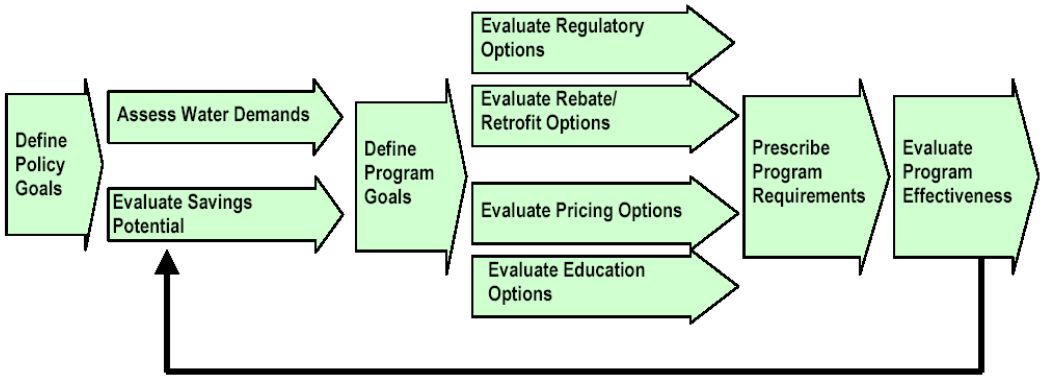

Figure 1
Water Conservation Initiative Implementation Process
Appendix A – Regional Reservoir Supply Planning and Implementation Process

For each step of the implementation process discussed below, the roles and responsibilities of the State, local government, and service providers are outlined, key considerations discussed, and opportunities for stakeholder input identified. These steps were developed to enable the GA DNR to prescribe a reasonable, flexible set of water conservation program requirements to assure efficient water management.

The water conservation implementation process described below is not intended to be the plan for that initiative but rather an outline of a stakeholder-involved process for its development that includes all the elements considered by GA DNR to be necessary for an adequate water conservation plan. The water conservation planning elements described in this section can be used in relation to the GA EPD Water Conservation Planning Rules referenced above.

3.1 Implementation Process

The major steps of implementation are discussed below. The implementation process for developing a comprehensive and sustainable water conservation initiative is complex and requires a focused evaluation of water demand characteristics and potential water use efficiencies. These analyses provide a technical basis for establishing measurable water conservation targets, typically expressed in terms of a defined reduction in per capita (or per employee) water demand or a percent reduction in water use by sector (residential, commercial, agricultural, etc.).

Given measurable water conservation savings targets, a comprehensive water conservation initiative involves definition of four fundamental program elements: regulatory measures, pricing, program, and education elements. Effective statewide mandates typically provide local governments and service providers flexibility in

tailoring program elements to local circumstances. These initiatives also modify and adjust program goals in response to effectiveness evaluations. A water conservation initiative is not a one-time effort, but instead must be sustained continuously over time, even as objectives change with needs and information.

3.1.1 Define Policy Goals

The first step in this implementation process is the definition of policy goals. The following policy goals are recommended for adoption by the local governments within the region, though additional goals may be added (http://www.epa.gov/owm/water-efficiency/webguid.html). These goals are:

- Promote and encourage water conservation as one of the primary tools to address north Georgia's long-term water supply challenges
- Raise awareness of the reasons for, and benefits of, water conservation;
- Outline long-term strategies for water conservation
- Promote changes which incorporate water conservation as a key component of sustainable growth management
- Identify incentives and educational activities to encourage people to use less water

Reviewing and revising these goals with interested stakeholders and decision-makers will help maintain focus during implementation of the subsequent water conservation plan. It is notable, however, that the policy goals identified above are far-reaching and may not be readily achieved in the early stages of a regional conservation initiative.

3.1.2 Conduct Needs Assessment

Following the initial definition of policy goals, data are needed to assess water demands and evaluate savings potential. The data collection and analysis methods associated with these two main components are discussed below.

Assess Water Demands

Developing an understanding of water demand patterns in the communities subject to the regional water conservation initiative will provide a foundation for developing program options tailored to be effective in Georgia. This assessment is typically conducted by examining multiple years of water utility billing information, preferably segregated by customer class and readily correlated to utility production data. Resultant statistics are typically per capita demands. For communities that are not served by water utilities (e.g., well owners), or that do not have readily available water billing data, local information may be supplemented by national research on end-use water demand patterns (Mayer et al., 1999). Of particular importance for tailoring water conservation initiatives for specific communities is a recognition of local conditions that may influence water use patterns or introduce demand anomalies—for example, soil conditions that are not conducive to landscaping, or local employment that is dominated by a large, water–consuming industry. Additionally, for purposes of enhancing water supply

management, the extent to which septic systems are used must be taken into account, because consumptive uses will deprive natural water systems of adequate return flows. In this event, program goals may have to be altered to address potential shortages of return flow in these areas.

Evaluate Water Savings Potential

Given a profile of water demand characteristics, opportunities for enhancing water use practices across the various water uses will be evaluated. This analysis may be conducted largely by reference to water use experiences of other similarly situated communities and available national research on water savings attributes of alternative measures and programs. Savings potential may be identified in terms of load management, reduction of peak period usage, and overall water conservation defined as a permanent reduction in per capita or per employee usage. Water savings potential may be estimated for individual communities, or more generically for a regional initiative, by aggregating savings potential identified in a sampling of Georgia communities, possibly by land use or customer type.

3.1.3 Establish Water Conservation Program Goals

As noted above, water conservation goals are established in advance of program implementation planning. However, for developing a comprehensive water conservation initiative, more specific water use efficiency targets will be established that require local governments and service providers to realize a portion of identified water savings potential. These goals may be aggregated to identify an overall regional initiative savings target, but fundamentally must reflect locally developed goals. Local conditions must be taken into account in establishing per capita or per employee targets among local governments and service providers.

Establishment of water conservation program goals also must be responsive to the water resource options and constraints that prevail in given regions and communities. For example, in areas where water supplies are relatively plentiful, water conservation economics may suggest more passive approaches than would be appropriate for communities that are faced with water shortages and may defer major capital investments through more active water conservation programs.

3.1.4 Establish Conservation Program

Implementation of a regional water conservation initiative requires both preparatory work to assess water demand characteristics and potential, and follow-up work to determine effectiveness and adjust program elements. However, a comprehensive conservation program includes four essential elements:

- Regulatory Options
- Pricing Options
- Program Options
- Education Options

Regulatory Options

Regulatory options include laws and ordinances that impose enforceable requirements on all properties subject to the ordinance provisions. Examples include plumbing code provisions for ultra-low-flow fixtures, restrictions on landscaping for new development, and voluntary and mandatory watering restrictions. These options define practices that may be sustained with relatively limited investment, are generally universally applied, and establish baseline conditions. One key consideration for regulatory measures relates to the potential for, and costs of, enforcement of the prescribed regulations. If the infrastructure to enforce mandates is inadequate, water savings may not be realized.

Pricing Options

Numerous pricing options are available to encourage water use efficiency, as illustrated in Table 1. Water pricing is most effective~~ly~~ when used in partnership with other water conservation initiative components. Fundamentally, the concept of water conservation pricing is to make the unit cost of discretionary water uses sufficiently high to encourage water use efficiency. Guidance on the selection and implementation of water conservation rates is readily available in the American Water Works Association's M1 manual, *Principles of Water Rates, Fees, and Charges,* or, for water conservation pricing specifically, the California Urban Water Conservation Coalition's (CUWCC) BMP 11 *Conservation Pricing*. Additionally, there are two water pricing guidance documents available from the CUWCC: *Designing, Evaluating, and Implementing Conservation Rate Structures* (T. Chestnutt, 1997) and *Setting Urban Water Rates for Efficiency and Conservation* (D. Mitchell and M. Hanemann, 1994). The Comprehensive Guide to Water and Wastewater Finance and Pricing, Second Edition (Raftelis, 1993) is also useful.

Program Options

Rebate and retrofit programs, one of many program options, provide direct financial incentives for the installation of water-efficient plumbing fixtures (e.g., water-efficient washing machines, low-flow showerheads, and ultra-low-flow toilets) in water customer buildings. Such options may be cost-effective to the extent that they defer or eliminate the need for supply and treatment facilities. Where water-using fixtures and appliances are subject to early replacement with water-efficient alternatives, cost-effectiveness requires a delicate balancing of financial incentives and attainable savings.

Education Options

General education of the public, particularly through school programs, is typically an important element of water conservation programs. A variety of techniques may be used to disseminate information to the general public, including: television and radio public service announcements (PSAs); fliers; emails; a web page; formal public meetings; and presentations at special events such as fairs,

community meetings, PTA meetings, etc. The education element must be consistent and continuous to support effective implementation of the program.

TABLE 1
Conservation Rate Structures

Rate Structure	Description
Seasonal	Charges that vary based on the period in which the service is provided. Typically, higher charges will be applicable to some or all usage in summer months as an incentive to limit peak demands.
Off Peak/On Peak	A variation of a seasonal rate structure that charges two separate rates for water use in the peak versus off-peak season. **All** water use during the peak season (usually summer) is subject to a higher rate than all water used during the off-peak season (usually winter).
Seasonal Period	A variation of the seasonal rate structure that differentiates between base (usually winter) water use and discretionary water use (water use typically associated with summer activities). Base usage is charged at one rate, and discretionary use is subject to higher unit charge(s). This form of seasonal rate is also a form of inclining block rate, with the inclining block implemented on a time-differentiated basis.
Inclining Block	A set of charges per unit of service delivery, wherein the unit charge increases as the volume of service delivery exceeds certain pre-established threshold(s).
Goal-Based	A variation of the inclining block rate structure, where the block definition is derived from one or more characteristics of the customer—persons per household, lot size, etc. Typically, a lower rate is set for levels of water use that are less than the goal, and a higher rate is set for levels of water use that are greater than the goal.
Marginal Cost Pricing	Generally, a variation of the inclining block rate structure where the last block is set according to the unit cost of the next increment of water system supply. This next increment of supply reflects the opportunity cost of not conserving; it is the avoided cost of having conserved.
Value of Service Pricing	A departure from conventional ratemaking methods that focuses on cost recovery. This pricing structure involves consideration of factors that reflect customer perceptions about the value of utility service as well as their willingness to pay for different levels or types of service.
Ratchet	A rate that is structured so that all usage below an established threshold is charged according to a specified rate structure. However, in the event that usage exceeds the threshold, higher charges are assessed against all use, not just the use above the threshold level.
Feebate	A rate format for providing water conservation incentives advanced in 1996[2]. This format introduces rebates for water usage under customer-specific water use allotments and penalties for use above these allotments. Conservation feebates, as originally advanced, contemplate the use of a revenue-neutral system of rebates and penalties that would overlay a utility's uniform volume rates (based on average embedded costs). The feebates would be triggered by variances from individually tailored usage allotments established independently of customers' prior period usage.

3.1.5 Establish Program Requirements

Effective regional water conservation initiatives are structured to enable local governments and service providers to draw from a variety of program elements. In defining requirements for program development that will serve as a prerequisite to

development of new water supplies, the State's regional initiative balances concerns for local control with overall imperatives to effect savings consistent with established policy goals. At a minimum, local governments and service providers should have implementable, cost-effective options from which to select. Program requirements also must balance considerations of local conditions with perceptions of fairness in imposing specific regulatory requirements.

3.1.6 Evaluate Program Effectiveness

A well-defined water use data collection protocol is established to (1) support analysis and documentation of water savings associated with program implementation and (2) facilitate the evaluation and adjustment of conservation programs. Using this information, program elements may be enhanced or discarded based on their effectiveness in meeting defined initiative objectives. In general, effectiveness is determined by examination of water use characteristics across a broad diversity of program participants. Differences in average monthly or annual water uses may not be attributed simply to program impacts but rather should be adjusted to account for differences in weather patterns, demographics, etc.

3.2 Roles & Responsibilities

For each of the major water conservation initiative components discussed above, the implementation process is further defined by establishing the roles and responsibilities of the State, specifically GA DNR, local governments/service providers, and the community. In addition, processes and tools to enable execution of these responsibilities are outlined and opportunities for engaging key stakeholders:

3.2.1 Assess Water Demands

The assessment of water demands across the service area requires a degree of reconciliation of data submitted by a broad array of communities. Inconsistent formats, information, and units of measure tend to complicate efforts to aggregate data and develop regional statistics on prevailing water use patterns.

State (GA DNR) Role

The GA DNR and (if present) the regional water authorities**will** establish a well-defined protocol for reporting on water demand characteristics requiring submittal on a regular (at least annual) basis. Templates that identify exactly what information is required will be constructed to enhance reporting quality. This information will, at a minimum, enable general calibration of water demand models used as the basis for water use forecasting for the State. Provisions for enforcement of reporting requirements (e.g., ineligibility for grants/loans, lower prioritization of new project siting) will be included in the reporting protocol.

Local Government/Service Provider Role

Timely submittal of water use demand data will be required by the state. The data should be provided in a format that could be disaggregated or aggregated at the

regional, county, or watershed level. Templates with information to aid in evaluating water savings potential should be appended.

Public Input/Communications Opportunities

This initial step of planning for regional water conservation implementation provides an opportunity to involve stakeholders in the decision-making process. GA DNR will outline plans for subsequent steps of the planning process, identify future opportunities for stakeholder involvement, and review the planned decision-making processes, in addition to conveying information on future water demand and supply characteristics. Generally, a structured decision process will be used in which:

- Information is distributed to key stakeholder groups (e.g., environmental groups, ACCG, Chambers of Commerce, etc.) and through public meetings
- Technical information is reviewed openly
- Recommendations are formulated through stakeholder dialogue

3.2.2 Evaluate Savings Potential

Estimates of water savings potential for the region will be prepared to identify constraints on available supplies and opportunities for delaying new water supply development. Adjustments to these estimates may be required by local governments or service providers with direct knowledge of local conditions.

State (GA DNR) Role

The GA DNR and regional water authorities will develop regional water conservation estimates based on uniform water use reporting and national research on water conservation savings available through implementation of selected measures. To aid in this process, a template for reporting on water conservation potential evaluation by local governments/ service providers will be developed, along with a *Water Conservation Opportunities and Constraints* report.

Local Government/Service Provider Role

Water conservation potential estimates will be calibrated to local data. Prevailing constraints on implementing water-efficient practices, and costs associated with realizing savings potential, will be identified. Required reporting to the State will be completed.

Public Input/Communications Opportunities

Summary information on other states' and communities' experiences with water conservation initiatives and available national research on water savings available through alternative conservation measures will be disseminated. Subsequently, stakeholders may be meaningfully engaged in discussions of the applicability of associated water savings estimates across communities to be served by regional

water supply projects. Stakeholders may be engaged in discussions of the viability of specific program options as well as appropriate adjustments to savings estimates.

3.2.3 Define Program Goals

Specific water conservation initiative goals will reflect a reconciliation of overall water resource policy goals, projections of available supplies, and prevailing water use characteristics. Regional targets for water savings will be developed to ensure adequacy of projected supplies, considering regional or sub-regional matching of economically available supplies and water demands.

State (GA DNR) Role

The State will compile geographically distributed water supply and (unadjusted) demand projections to identify potential water supply shortfalls and constraints. These data will provide the basis for identifying (1) avoided costs resulting from implementation of water conservation initiatives and (2) the levels of water savings required to match available supplies and demands. These data will serve as the basis for defining water conservation program goals.

Local Government/Service Provider Role

This entity will confirm the viability of water conservation targets mandated by the State; identify prevailing constraints on implementing water-efficient practices and costs associated with realizing savings potential; and complete required reporting to the State.

Public Input/Communications Opportunities

The previous steps are largely a technical evaluation of water use characteristics and available efficiencies. Developing goals, however, involves a synthesis of technical considerations and community preferences. In general, the definition of program goals is facilitated by involving a broad range of stakeholders. A variety of specific mechanisms may be used for securing such stakeholder input–from the formation of Citizen Advisory Committees, to structured solicitations of key stakeholders, to more general survey instruments. To be useful, goals must have a degree of specificity. Effective water conservation programs should not simply *promote water use efficiency*. Rather, they should be grounded in substantive, publicly acceptable performance metrics (e.g., savings targets, program participation levels, market penetration) that can be used to assess the effectiveness of water conservation measures.

3.2.4 Define Conservation Program Elements

In evaluating all four fundamental conservation elements (e.g., regulatory, pricing, program, and education), the principal challenge is determining the optimal combination of elements to meet savings targets, given community preferences and water supply challenges.

Regulatory Options

Regulatory options represent particularly cost-effective methods for realizing water conservation potential, particularly in new development. However, they can be frustrated by inadequate enforcement provisions and may be objectionable to local community members.

State (GA DNR) Role

Regional leveraging of regulatory opportunities may be advanced by developing standard ordinances and enforcement codes for adaptation by individual communities. These standard ordinances afford local governments the benefit of state-sponsored review of relevant legislation and the experience of other communities. Accordingly, such ordinances will be effective, less difficult to implement, and likely to withstand legal challenge.

Local Government/Service Providers Role

Regulatory options require enactment by local jurisdictions, notification and public communication that regulatory measures have been enacted, and sustained enforcement. Despite the mandates of regulatory options, uncertainties in achieving savings continue, primarily due to inadequate or inconsistent enforcement of regulatory requirements.

Public Input/Communications Opportunities

Though enactment of regulatory options typically requires a defined number of public hearings, public understanding and acceptance of new restrictions requires advance involvement in decision-making and communication of decisions.

Pricing Options

Pricing is an important element of any water conservation initiative not only because of the potential for pricing to yield savings, but also—and perhaps more fundamentally—because pricing is the principal vehicle by which the value and relative scarcity of water resources are conveyed.

State (GA DNR) Role

Designing rates to encourage water use efficiency can be relatively complicated, requiring detailed information on water use patterns over time and across customer classifications. Guidance on rate design is readily available through, for example, AWWA's Water Rates manual or the CUWCC publications. GA DNR, drawing from the experience of other State agencies, can support water conservation pricing through dissemination of guidance (via seminars, manuals, compendiums) on water conservation pricing methods used in Georgia and appropriate for application in the state.

Local Government/Service Providers Role

The goal is generally to design and implement rates that effectively balance a set of competing, often conflicting, objectives, including: revenue adequacy and stability, administrative simplicity, equity (e.g., cost-of-service), and incentives for water-use efficiency. Water conservation rate structures must cope with a broad diversity of water use characteristics across, and even within, customer classes—providing incentives for efficiency while not inequitably penalizing high-volume, yet efficient, water customers. Service rates must be designed, analyzed with respect to accomplishment of rate objectives and customer impacts, and implemented with notification to (and potential involvement of) impacted ratepayers.

Public Input/Communications Opportunities

Water rate studies over the last decade have increasingly used stakeholder involvement techniques to secure support for proposed rate increases and rate structure changes. Typically, rates are developed with input from Citizen Advisory Committees, as rate issues are sufficiently complex to preclude more abbreviated review and assessment of rate design options.

Program Options

Water conservation initiatives are most commonly associated with various rebate and retrofit programs designed to promote installation of water-efficient appliances, fixtures, and other measures. These programs often involve financial incentives and other mechanisms to influence market penetration. Notably, there is a broad array of specific measures on which individual programs may be focused (showerheads, toilets, dishwashers, washing machines, etc.) and various techniques for rebate/retrofit program implementation.

State (GA DNR) Role

Considering the wide range of water conservation measures, program designs, and factors impacting performance, guidance information from the State is useful during implementation.

Local Government/Service Provider Role

The design and implementation of water conservation rebate/retrofit programs must be tailored to the specific needs of the community. This tailoring may involve targeting specific customer classes or end uses, determining appropriate levels of financial support, and establishing appropriate inspection/verification procedures.

Public Input/Communication Opportunities

Public input may be helpful in designing specific conservation programs, as well as determining effective methods to market individual water conservation programs.

Education Options

Education programs are a vital component of successful water conservation programs. These programs work toward instilling a conservation ethic that will help ensure the durability of savings over time as well as promote greater public understanding and acceptance of water efficiency imperatives.

State (GA DNR) Role

Development of model public education materials (PSAs, brochures, fact sheets, etc.) and specifically curricula for school programs may facilitate education programs by local governments, schools, and service providers. Certain states (e.g., Texas, California) have elected to certify education programs and extend awards for excellence in this area.

Local Government/Service Provider Role

General public education efforts, as well as coordination of local school programs' water conservation education efforts, must be conducted. Of critical importance is ensuring that public education efforts support and advance other elements of the overall water conservation initiative.

Public Input/Communication Opportunities

Beyond the obvious role of public education as a form of public communication, it is important to note that the design of public education efforts may be significantly improved by early involvement of key stakeholders and focus groups.

3.2.5 Prescribe Program Requirements

The development of a regional water conservation program will involve establishing a framework within which local jurisdictions and service providers have sufficient flexibility in implementation to tailor their water conservation efforts while ensuring that targeted water efficiencies are realized. An initiative, therefore, is a compilation of individual actions and programs that signal a mandate for water use efficiency, the components of which provide needed resources to participating communities.

State (GA DNR) Role

The State has authority for permitting of regional water supply projects, provisions of financial assistance for infrastructure development, and allocation of water withdrawals. As a result, it is in a position to effectively mandate requirements for Georgia communities' water conservation programs.

These requirements should be sufficiently flexible to accommodate local conditions and easily reported to facilitate approval and certification. Development of program reporting templates and use of review and certification procedures may facilitate program implementation.

Local Government/Service Provider Role

As a regional water conservation program is planned, it is incumbent on local governments and service providers to help define the structure and attributes of program requirements. Further, these organizations need to serve as ambassadors for the water conservation initiative, reinforcing the need for water-use efficiency.

Public Input/Communications Opportunities

Throughout the process of defining program requirements, key stakeholder groups will be involved to engender support for the overall program structure, savings targets, and attributes. Public communications regarding the merit of the water conservation initiative, opportunities afforded through the program, and endorsement of key stakeholder groups will be critical to long-term program success.

3.2.6 Evaluate Program Effectiveness

Program implementation planning will include provisions for regular reporting of water use data, evaluation of individual programs using prescribed evaluation techniques, and consideration of adjustments to the overall initiative.

State (GA DNR) Role

Evaluating the effectiveness of conservation initiatives may be complicated by the need to consider impacts from alternative perspectives, account for the influences of weather, economic, and demographic trends, etc It is not simply a matter of tracking changes in per capita or per employee water demands, though doing so is clearly fundamental and requires substantial data collection. Accordingly, the State may provide guidance on individual program evaluations, drawing from technical literature on the subject (.e.g., CUWCC publications and AWWA Annual Conference Proceedings from sessions sponsored by the AWWA Water Conservation Committee), both for water and energy conservation programs. In addition, the State should facilitate continuous improvement in the development and reporting of water use patterns by establishing reporting formats and requiring regular reporting. This information may be summarized in regular (e.g., annual) reports on water use patterns and progress toward achievement of water savings goals.

Local Government/Service Provider Role

Beyond compilation and reporting on water use patterns, local governments and service providers are responsible for the effectiveness of their program efforts. Accordingly, their role will include conducting program evaluations using prescribed methods, as well as tailoring program adjustments to be responsive to community-specific concerns and conditions.

Public Input/Communications Opportunities

Program evaluations are useful for showing State and local accomplishment of water savings goals and should include communication on the need for enhanced

water use efficiency. As a result, distribution of evaluation results to stakeholders and the general public is critical for ensuring accountability for, and momentum of, the regional initiative.

3.3 Conclusions/General Considerations

Discussed above are the basic steps in a regional conservation initiative, with potential roles and responsibilities outlined, and public involvement opportunities highlighted. In conducting this process, several considerations will determine its relative success:

- An effective water conservation initiative will require collection and analysis of adequate data on water use characteristics, and regular monitoring and evaluation of changes in water use patterns over time. Individual programs and state mandates will require adjustment as programs are implemented.

- While mandates may be developed at the state level, implementation of water conservation programs will rest largely with local governments and service providers. Accordingly, providing necessary flexibility in requirements and guidance on implementation techniques is critical to acceptance of water conservation initiative requirements and the receipt of state funding for regional water supply projects.

- There are ample opportunities for substantive public involvement and communications throughout the planning and program implementation process. Commitment to a stakeholder-based, structured decision process in designing the water conservation initiative promotes public understanding and acceptance of water supply challenges, the need for water use efficiency, and the beneficial attributes of the State's regional conservation initiative.

- Implications for new project siting should be a prominent part of the discussions on water conservation initiative implementation. Development of additional water supplies in a given region of the state may not be justified when use of existing water supplies is markedly inefficient. Accordingly, regional project siting should involve consideration of regional water use practices and ensure that project sizing, timing, and location will support sustainable, water-efficient economic development.

- A water conservation initiative is not a single event, but must be sustained, re-evaluated, and as necessary, modified over time.

Part 4: Regional Water Supply Project Permitting and Implementation

Water supplies can be extended through increasing supplies (for example, construction of new reservoirs, expanding groundwater well fields, increasing reuse), decreasing demand (e.g., through water conservation plumbing retrofits, watering restrictions, price increases), or improving efficiencies (e.g., increasing water system interconnections, reductions in system losses, metering, reallocations, appropriate land use decisions). GA DNR considers that sound management and diversification of water supply sources will provide sufficient water to meet the needs of each region within the state for the foreseeable future.

4.1 Project Management

The success of the implementation phase is determined primarily by the extent to which projects are completed on time and on budget. If the schedule and budget are not achieved, the benefit/cost formula for choosing that alternative is distorted, and the alternatives analysis is invalid. Therefore, it is critical that the schedule and budget be maintained. Most cost and schedule overruns are a result of poor planning and poor data collection in the early stages of the project (World Commission on Dams, 2000). The project will be supervised by personnel experienced in the management of complex projects and who are committed to achieving the project objectives project.

Contractors for each phase of the project will be selected using a transparent bidding process, with an independent panel of experts used in the selection process. The independent panel will be chosen in an open forum (see Part 1: Public Participation Plan of this document) and will represent those served by and those financing the project. The bid process shall include all aspects of the project, including Professional Services. Professional Services will be acquired in compliance with O.C.G.A Sections 50-22-1 through 50-22-9. No outside work on any type of water project will be performed without an approved performance bond having been executed and delivered to the agency.

The following sections provide a generic implementation plan that will be suitable, with limited modifications, to reflect site-specific factors, for each recommended project. Implementation will address the following steps: site selection and associated permitting requirements (including mitigation), design and construction considerations, and project operating criteria.

4.2 Project Site Selection and Permitting

If the water supply alternative chosen may result in impact to waters of the State, including wetlands and other special aquatic sites, the project sponsors must receive a permit from the USACE (Clean Water Act Section 404 permit) and a 401 certification from GA EPD prior to the commencement of project construction activities. If a

reservoir is the water supply alternative chosen, dams (above a minimum height) come under the jurisdiction of the GA EPD, Safe Dams Program, and this office must be involved during all phases of project development. Prior to advertising for bids, the Safe Dams Program makes a complete review of the project design, including design reports, plans, and specifications.

4.2.1 Clean Water Act/Section 404 Permitting Process

All USACE permit applications must include delineations of the extent of waters of the United States that will be impacted by the proposed project. Applications for a Section 404 CWA permit also must comply with NEPA/GEPA documentation requirements and with Section 401 CWA water quality certification requirements. To the extent possible, the Section 404 application, the NEPA/GEPA documentation, and the 401 Water Quality Certification should be coordinated to facilitate processing of the permit.

The 404 Program does not allow permits if the nation's waters would be significantly degraded. To receive a permit, an applicant must demonstrate:

- No practicable alternative exists that is less damaging;
- Avoidance and minimization of impacts to the extent practicable; and
- Acceptable compensatory mitigation for any unavoidable impacts.

The 404 Individual Permit Process

1. ***Early coordination with USACE is highly desirable.*** The applicant should arrange a pre-application meeting with USACE to discuss the intended project prior to developing the permit application. The pre-application meeting typically includes other agencies involved in water supply permitting and may be coordinated with early NEPA/GEPA review agency meetings.

2. ***Applicant files a complete application with USACE.*** Should USACE determine that the application is incomplete, USACE must formally request the additional information to complete the application within 30 days.

3. ***USACE issues a public notice.*** Public notice on the project must be issued within 15 days of receipt of a complete application. The public notice describes the permit application, including the proposed activity, its location, and potential environmental impacts. The public notice invites comments within a specified time.

4. ***Public Comment Period.*** Public comments typically are solicited for 30 days. Following the comment period, USACE and other Federal and State agencies, organizations, and individuals review the application and comments. USACE determines whether an EIS is necessary. An EIS is typically required for reservoir projects.

5. ***Public Hearing.*** Citizens may request that USACE conduct a public hearing. In these cases, USACE determines whether there is sufficient reason to hold such a hearing. If a public hearing is warranted, USACE schedules it. Comments from the public hearing are also reviewed and considered. Public involvement in the permitting process is discussed further in Step 7. It should be noted that public involvement can be used to address public concerns during the permitting process. Public hearings for Section 404 permitting may be combined with public hearings for NEPA/GEPA to streamline the process.

6. ***Permit evaluation.*** USACE evaluates the permit application based on comments from other agencies and the public, NEPA/GEPA compliance, and the direct USACE criteria.

7. ***Environmental Assessment and Statement of Finding.*** The Statement of Finding, prepared by the USACE, is a public document that explains how the permit decision was made. If an EIS is prepared, the Record of Decision (ROD) may serve as the Statement of Finding. If an EA is prepared, the Finding of No Significant impact (FONSI) may serve as the Statement of Finding.

From the applicant's perspective, filing a complete application as soon as possible greatly facilitates the permitting process. A complete application includes:

- Description of the proposed activity;
- Demonstration that there are no practicable alternatives to the proposed action;
- Results of environmental surveys;
- Demonstration that impacts to waters have been avoided and minimized to the extent practicable;
- Description of impacts to environmental resources; and
- Acceptable compensatory mitigation plan for unavoidable impacts resulting from the project.

The pre-application meeting can be used to clearly identify concerns of all agencies and to assure that those concerns are addressed as the permit application is developed. The application also should include the Water Supply Needs Analysis and hydrologic modeling. NEPA documentation and environmental surveys support the Section 404 permitting process. The applicant should coordinate with all involved agencies as early as possible to ensure that all agency concerns are addressed in the application. Further processing and consideration of the application are not possible until the complete application is filed.

4.2.2 Section 401 Certification

Under provisions of the CWA, an applicant for a federal license or permit to conduct any activity that may result in a discharge to navigable waters must provide the federal

agency with a Section 401 certification. Generally, Section 401 certification has been applied to hydroelectric projects seeking a license from the Federal Energy Regulatory Commission (FERC) and for dredge-and-fill activities in wetlands and other waters that require permits from the USACE under Section 404 of the CWA. Section 401 certifications are issued if the GA EPD concludes that the proposed project would not violate state water quality standards. The GA EPD will also assess whether reduced flow downstream or diminished water quality from the proposed project would violate state water quality laws for minimum flow requirements.

GA EPD's 401 certification and its role in the multi-agency review process for proposed water supply projects are currently under review and revision. GA EPD's Water Resources Branch has taken a relatively active role in the overall 401/404 application process. The final revised criteria are likely to include the following language to assure a defensible 401 certification:

- The proposed activity will not degrade high quality waters in violation of state water quality standards.
- The proposed water withdrawal/project will not result in violation of the general criteria applicable to all waters.
- The proposed water withdrawal/project will not result in violation of any applicable numeric criteria.
- The proposed project design will be the best practicable under existing technology and protect existing beneficial uses.
- The proposed water withdrawal/project will provide for the protection of the existing water use.
- The agency will have reviewed and concurs with the applicant's needs assessment.
- The agency will have reviewed and concurs with the applicant's proposed service area and found it to be defensible.
- The agency will have reviewed the applicant's alternatives analysis and concurs with the proposed alternative.
- The proposed activity will comply with state water quality standards to protect designated uses, meet water quality criteria, and comply with anti-degradation policy.

4.2.3 NEPA/GEPA Compliance

For both NEPA and GEPA, compliance requires a description of the proposed action, a description and analysis of alternatives as discussed in the previous section, and a description of the environmental consequences that would result from implementation of any of the alternatives. NEPA documentation may involve preparation of either an EA or an EIS. The extent of anticipated environmental impact will determine which document format is required (see NEPA Process section below). These documents follow a defined format identified in Council of Environmental Quality (CEQ) guidance documents for NEPA implementation for the lead agency. GEPA requires preparation of an

Environmental Effects Report (EER), which is similar in design to NEPA documents. The NEPA/GEPA processes will be combined to streamline the application process. As NEPA documentation typically is more stringent than that of GEPA, the discussion below focuses on NEPA.

The USACE, the lead federal agency, is responsible for supervising preparation of the NEPA documentation for water supply project permitting in Georgia. USACE has the responsibility to solicit cooperation from other federal or state agencies that have jurisdiction by law or special expertise on any environmental issue that should be addressed in project permitting, possibly including U.S. Fish and Wildlife Service (FWS), USEPA, GA DNR, GA EPD, and Georgia Historic Preservation Division (GHPD). If the proposed project may affect an Indian reservation, USACE will consult with the Indian tribe (40 CFR 1508.5). NEPA documentation for project permitting is likely to involve several cooperating agencies.

After discussions, USACE and potential cooperating agencies determine by letter or memorandum which agencies will undertake cooperating responsibilities. Cooperating agencies must assume responsibility for the development of information and the preparation of environmental analyses at the request of the lead agency (40 CFR 1501.6(b)(3)). Cooperating agencies are now required by 40 CFR Section 1501.6 to devote staff resources early in the NEPA process, at the scoping and Draft EA/EIS preparation stages, rather than waiting until the review stages. If a cooperating agency determines that its resource limitations preclude involvement, it must inform the lead agency in writing and copy the CEQ (40 CFR 1501.6(c)). In so doing, that agency removes itself from all phases of the process, including the later stages of review and comment, as well as decision-making on the proposed action. Therefore, agencies with jurisdiction by law must cooperate in the NEPA process. There is no express prohibition in NEPA to prevent an agency from opting out of the early stages of the NEPA review and entering into the process in the review stages. However, the process operates more efficiently if all concerned parties are involved from the initial stages.

NEPA Process

The first step in the NEPA process is to initiate discussions with the USACE. Requests for cooperation among agencies should come at the earliest possible time in the NEPA process. In addition, environmental studies will be initiated as soon as possible to ensure that environmental factors are considered at an early stage in the planning process and avoid situations where planning is complete and alternatives to the proposed action are eliminated before the NEPA process adequately addresses them. Early consultation fosters a decision-making process that avoids unexpected confrontations later in the process. A pre-application consultation with USACE and likely cooperating agencies allows applicants to discover, in advance of project planning, what environmental studies or other information will be required to support NEPA compliance, and what mitigation requirements are likely.

USACE may authorize the preparation of an EA by the applicant (40 CFR 1506.5(b)). However, USACE must still evaluate the environmental issues

independently and take responsibility for the EA (46 CFR 18029). This provision is intended to encourage and enable applicants to include environmental considerations into the planning processes in a way that facilitates the application of NEPA. Typically an EIS is prepared by USACE, but may draw on documentation developed by the applicant. Scoping is a requirement of the NEPA process.

Scoping is used to identify alternatives to a proposed project, receive input on concerns of all involved agencies, identify possible significant impacts that may have been overlooked, and assist in making decisions about requiring an EA or EIS for a proposed project. Scoping is initiated very early in the NEPA process and includes appropriate public notice and enough information available on the proposed action that the public and involved agencies can participate effectively.

During the early coordination stage, possible reasonable alternatives to the proposed action will be developed with input from other concerned parties. Some of these alternatives may be eliminated from further consideration through the agency coordination process. Any alternatives eliminated from further consideration will be recorded along with the justification for their elimination. This information must be included in the NEPA document. The process for analysis of alternatives was previously discussed in Section 2.4 and is not further discussed here.

Initial coordination with agencies identifies the amount and types of environmental surveys required to support the NEPA analysis. Environmental data addressing hydrology, cultural/archeological resources, wetlands and other waters of the United States, and protected species or their potentially suitable habitats may be required (see Section 2.4.2). By identifying the environmental data required by the agencies early in the process, data can be compiled in a timely fashion. Environmental surveys are described in the next section.

Once the necessary environmental data are collected, the probable environmental consequences of each alternative are determined. CEQ regulations define the different types of effects that should be evaluated under NEPA:

a) *Direct effects, which are caused by the action and occur at the same time and place (40 CFR 1508.8).*
b) *Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).*
c) *Cumulative effects, which are the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor*

but collectively significant actions taking place over a period of time (40 CFR 1508.7).

"Effects" and "impacts" as used in these regulations are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts also may include those resulting from actions that have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Analysis of cumulative effects should include effects that may result offsite as well as those that may occur onsite. Of particular concern with water supply projects are long-term changes in downstream aquatic communities that may not be evident for many years after operation of the project is initiated.

After determination of environmental consequences, all alternatives under consideration are subjected to comparative analysis. All pertinent information, from project description through comparison of alternatives, is included in the draft NEPA document and submitted for review. The draft document is reviewed by USACE, all cooperating agencies, and the public. All comments received from agencies and the public on the draft NEPA document must be addressed and a final NEPA document issued. USACE then evaluates the results of the NEPA analysis and makes a decision on whether to proceed with the project.

If an EIS is prepared, USACE issues a ROD. This is a public environmental document that identifies the alternative to be carried forward and justifies that decision based on evidence presented in the EIS. The ROD may specify mitigation measures that must be implemented to offset environmental impacts of the project.

If an EA is prepared, there are two possible decisions. The lead agency (USACE) may decide, based on evidence presented in the EA, that an EIS is needed to adequately address the proposed action. In that instance, the NEPA process reverts to the beginning, but some streamlining of the EIS process can result from data gathered to support the EA. The other possible decision resulting from an EA is a FONSI. A FONSI is a public document that specifies that the proposed action will have no significant impacts and justifies that decision based on evidence presented in the EA. A FONSI may specify mitigation measures that must be implemented to offset environmental impacts of the project.

4.2.4 Environmental Impact Studies

This section outlines recommendations for performing detailed hydrologic, ecological, and cultural/archaeological resource evaluations to support the development of the Section 404 Permit application for USACE approval, NEPA/GEPA compliance, and State permitting.

Hydrologic Studies and In-Stream Flow Analysis

Hydrologic systems are modeled to confirm that flow downstream of the project will be sufficient to support aquatic life forms found in the stream. To accurately model the system, baseline studies on stream flow must be conducted. These studies must cover a sufficient time period to address typical sustained high- and low-flow periods. This includes monitoring throughout the water year, as well as monitoring during years of high and low flow. In cases where extended monitoring data are not available, data can be "boot-strapped," i.e., hydrologists can correlate one or more years of data for a given stream against long-term records for nearby streams. This enables modelers to use the relationships with neighboring stations to extend the modeled period. This process is acceptable only in basins that exhibit good correlation during the boot-strap period.

The following options are permissible for determining minimum instream flows for all new surface water intakes and reservoirs:

- **Monthly 7Q10 Minimum Flow Option**: The project must release the lesser of the monthly 7Q10 flow or inflow to the reservoir. For offstream pump storage reservoirs, the flows must be protected at the intake as well as the reservoir outlet.

- **Mean Annual Flow Options:**

  1) 30% Mean Annual Average Flow (Unregulated Streams) - The project is required to release the lesser of 30% of the mean annual flow of the stream, or the inflow, at the intake point.

  2) 30/60/40% Mean Annual Flow (Regulated Streams) – The lesser of 30% of the mean annual flow or inflow during the months of July through November; 60% of the mean annual flow or the inflow during the months of January through April; and 40% of the mean annual flow or inflow during the months of May, June, and December is required to be released from the reservoir.

- **Site-Specific Instream Flow Study Option:** In this option the applicant may conduct a site-specific instream flow study to determine the minimum flow requirements to maintain aquatic habitat.

The minimum instream flow requirements must be met for approval of the surface water withdrawal permit from the GA EPD Water Resources Branch. These requirements are typically included in the final Section 404 permit to ensure that the project meets the State's Section 401 water quality certification requirements.

To comply with the minimum instream flow requirements, regional reservoir projects typically need to complete site-specific instream flow studies. There are a number of available methodologies for determining site-specific flow requirements, including desktop and field approaches (Evans and England, 1995). The GA DNR recommends the application of site-specific "field" methodologies such as the modified Tennant method (Tennant, 1976), wetted perimeter

technique (Nelson, 1980), Physical Habitat Simulation (Bovee and Milhous, 1978), or the Instream Flow Incremental Methodology (IFIM) (Bovee, 1982). The method chosen will be the one most appropriate for the site under investigation.

These field methods require some or all of the following information: replicate habitat sampling, development of habitat suitability criteria or preference curves for life stages of individual fish species through biological sampling, sediment and water routing studies, and hydraulic and hydrologic studies. It should be noted that these models are very complex and will be developed by qualified fisheries and engineering professionals.

The project applicant will meet directly with Wildlife Resources Division staff prior to initiation of site-specific field studies to agree on an appropriate methodology for a specific project. Development of an appropriate site-specific minimum instream flow requirement will expedite the overall permitting and review process, assist the applicant in defining the final yield for a given reservoir site, and help determine the overall viability of a reservoir site for meeting the applicant's water supply needs.

Physical studies of the channel morphology must be conducted to assure that models accurately reflect conditions in the stream. Hydrologic studies are combined with biological studies of aquatic life forms in the stream to predict future conditions after the project is in place.

Biological Studies

Biological studies include studies to determine whether protected species or their potentially suitable habitats occur on the project site and studies to characterize the flora and fauna of a project site and downstream areas. For reservoir projects, the project site includes the physical location of the dam and all area submerged upstream of the dam. Results of biological surveys are presented to USACE and other agencies involved in the permitting process.

Information from general surveys on flora and fauna may be used to determine effects, both positive and negative, of the proposed project in the project area. For water supply reservoir projects, characterization of aquatic life present downstream (offsite) of the proposed reservoir site is also necessary. Once a dam is in place, the release of water from the impoundment may result in changes in physical-chemical properties of the receiving stream. Assessment of aquatic life downstream of the dam allows determination of future effects to downstream life. Stream segments that contain fish communities rated as excellent, as determined through the Index of Biotic Integrity, will be avoided in the reservoir siting process to the maximum extent practicable. For general surveys, it may not be practical to survey through an entire year for a full characterization. In these instances, general surveys are scheduled to provide as much useful information as possible.

Federally protected species include those listed as threatened or endangered by the FWS or National Marine Fisheries Service (NMFS), or species proposed for listing by FWS or NMFS under the authority of the Endangered Species Act

(ESA). The ESA also requires that FWS and NMFS designate critical habitat for listed species. Officially designated critical habitat also is protected under the ESA. In Georgia, State-protected species include those designated as threatened, endangered, rare, unusual, or of special concern by the GA DNR. USACE is required to coordinate with state and federal agencies responsible for protected species under the Fish and Wildlife Coordination Act.

Prior to conducting surveys for protected species, the applicant must contact FWS and GA DNR to determine which, if any, protected species may be of concern in the proposed project area. This information can be useful in focusing a protected species survey. However, it is not unusual for a species not previously identified from a given area to be discovered during surveys.

Surveys for protected species are performed, as often as possible, during a time when the species of interest are likely to be observed and properly identified. For flowering plants, this typically is during the time the species is in bloom, and multiple surveys may be required to ascertain whether protected species occur in a proposed project area. For migratory animals, surveys must be scheduled for a time when the species may be present on the site. Surveys must also identify whether potentially suitable habitat for protected species occurs on a site.

Wetlands and Other Waters of the United States Studies

Section 404 permitting, NEPA compliance, and GEPA compliance require consideration of impacts to wetlands and aquatic resources. The federal statutory definition of "wetlands" is contained in the CWA. The State of Georgia has not adopted a different definition of "wetlands" for regulatory purposes. Therefore, the approach for delineating wetlands and other waters developed by the USACE for Section 404 issues is used for all aspects of the permitting process.

Any delineation of wetlands and other waters of the United States must be verified by the USACE. Section 404 of the CWA gives the USACE authority to regulate dredge and fill activities in waters of the United States, including wetlands and other special aquatic sites. Jurisdictional wetlands are defined as follows:

> *Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (USACE, 1987).*

All streams within the proposed project area must be identified and classified as to flow regime: perennial, intermittent, or ephemeral. During field studies, all wetland boundaries must be clearly identified with survey flagging for later mapping, or be mapped as they are delineated. All other waters, including streams, must be clearly identified for later mapping or mapped as they are identified. Once the delineation and mapping are complete, the data are used to determine impacts to waters resulting from the proposed project. Impacts to

wetlands, ponds, lakes, and impoundments are calculated based on surface area, while impacts to streams are calculated based on the linear footage impacted. Delineation results and impact calculations are submitted to USACE to support permitting. Mitigation of unavoidable impacts to wetlands, where applicable, follows Georgia's Standard Operating Procedures as outlined later in this document, under Section 4.2.5.

Cultural/Archeological Resource Studies

The National Historic Preservation Act (NHPA) established a program to preserve the nation's historical and cultural foundations. Section 106 of the NHPA requires USACE to consider the consequences of issuing a permit on historic/cultural/ archeological resources (CFR1508.18 (b)(4)) and provide the Advisory Council on Historic Preservation an opportunity to comment prior to implementation of the action. Section 106 review encourages, but does not mandate, preservation. Sometimes a needed project cannot proceed without harming historic properties. GEPA requires consideration of potential impacts to historic/cultural/ archeological resources as a result of State actions. The GHPD has the responsibility for protecting cultural resources in Georgia and has primary review responsibility under the NHPA. To successfully complete Section 106 review of a permit application, the following information must be submitted to USACE and GHPD to facilitate their review:

- Records searches to determine if eligible or potentially eligible sites are known from the project area;
- Physical survey of the project area to determine if any previously unrecorded sites are eligible or potentially eligible for listing;
- Determination of how historic properties might be affected;
- Exploration of alternatives to avoid or reduce impacts to historic properties; and
- Agreement with the GHPD and/or Indian tribe (and the Council in some cases) on measures to deal with adverse effects or obtain advisory comments from the Council.

To facilitate Section 106 review, cultural and archeological resource studies will be conducted as early in the process as feasible.

Socio-Economic Studies

Socio-economic studies are conducted as part of the NEPA process to determine socio-economic impacts in the region of influence of the project site. Results of these studies are included in the NEPA document and (when required) in permit applications. Information from socio-economic studies may be used to determine both positive and negative effects of the proposed project in the project area or region of influence. Potential socio-economic impacts for regional water supply

projects may involve human population/demographics, employment, income, housing, property values, public services, public safety, and transportation. Additionally, socio-economic analysis would also address any disproportionate adverse effects on children and minority and low-income populations.

For purposes of characterizing the socio-economic environment, the project area region of influence includes the county occupied by the project. However, the region of influence can be expanded or reduced depending on the individual project. The region of influence will include all of the components in a self-sustaining region such as local businesses, local government, and local population. The region will reflect the limits of the economic activity associated with the affected population such as the residence patterns of the affected environment, availability of local shopping opportunities, and commuting times.

4.2.5 Mitigation

"Mitigation" may include:

- Avoidance and minimization of impacts to waters of the United States from construction and operation of the project, as required under Section 404 of the CWA.
- Compensatory mitigation for unavoidable impacts to waters of the United States resulting from construction and operation of the project.
- Mitigation for unavoidable impacts to cultural/historic/archeological resources resulting from construction and operation of the project, as required under the NHPA.
- Control or elimination of impacts related to construction runoff, as required as a condition of Section 404 CWA permits.
- Construction timing or techniques to reduce or avoid impacts to sensitive species.
- Relocation of sensitive species, plants, or animals to avoid impacts.
- Operational and design techniques to reduce or eliminate downstream changes in hydrology and physico-chemical conditions.

Avoidance/Minimization of Impacts to Waters of the United States

Mitigation for impacts to streams and wetlands begins with avoidance and minimization. This aspect of mitigation will be satisfied if the applicant properly conducts a Water Needs Analysis and addresses the CWA Section 404(b)(1). Avoidance and minimization includes considerations of options for meeting the water supply needs through alternative sources or through conservation, in addition to different locations or configurations for a reservoir.

Water supply projects may have unavoidable impacts to waters (wetlands and streams). Acceptable compensatory mitigation plans for these unavoidable impacts are required as part of the permit application or as a condition for USACE issuing the permit. USACE has guidelines and formulas for determining the amount of mitigation required for projects that impact streams and wetlands. Options for developing an appropriate compensatory mitigation plan should be

developed in coordination with USACE, FWS, GA DNR, and GA EPD. Options for compensatory mitigation may include:

- Development of mitigation sites by the applicant;
- Use of a mitigation bank authorized to serve the project area;
- In lieu fee payments to the Georgia Land Trust or other suitable entities; and
- Combination of some or all of these options.

USACE has developed Standard Operating Procedures (SOPs) for wetland and stream mitigation in Georgia (Standard Operating Procedures: Compensatory Mitigation for Wetlands, Open Water, & Streams; Department of the Army, Savannah District, Corps of Engineers). These SOPs were developed to provide:

> *...predictability and consistency for the development, review, and approval of compensatory mitigation plans. A key element of this SOP is the establishment of a method for calculating mitigation credits. While this method is not intended for use as project design criteria, appropriate application of the method should minimize uncertainty in the development and approval of mitigation plans and allows expeditious review of applications. However, nothing in this SOP should be interpreted as a promise or guarantee that a project, which satisfies the criteria or guidelines given herein, will be assured of a permit. The District Engineer (DE) has a responsibility to consider each project on a case-by-case basis and may determine in any specific situation that authorization should be denied, modified, suspended, or revoked. This SOP does not obviate or modify any requirements given in the 404(b)(1) Guidelines or other applicable documents regarding avoidance, sequencing, minimization, etc. Such requirements shall be evaluated during consideration of permit applications.* (GA SOP: Purpose)

In addition to USACE mitigation requirements, other federal or state agencies may impose additional mitigation requirements that must be met for a permit to be issued. As with other aspects of the permitting process, early involvement of all agencies will result in streamlined permitting and greater assurance that all concerns are addressed.

The Georgia SOPs include formulas for calculating the amount of impact to wetlands, streams, and other waters and formulas for calculating how much credit a given compensatory mitigation act will generate. For any compensatory mitigation undertaken, the number of credits claimed for preservation activities may not exceed 50% of the total mitigation credits required.

However, evaluation of the application may determine that additional information is required, either by USACE or other agencies. The permitting process cannot be completed until all requested information is provided. As a result, sequencing of mitigation actions, as shown in Figure 2, can be critical to the timely review of the permit application.

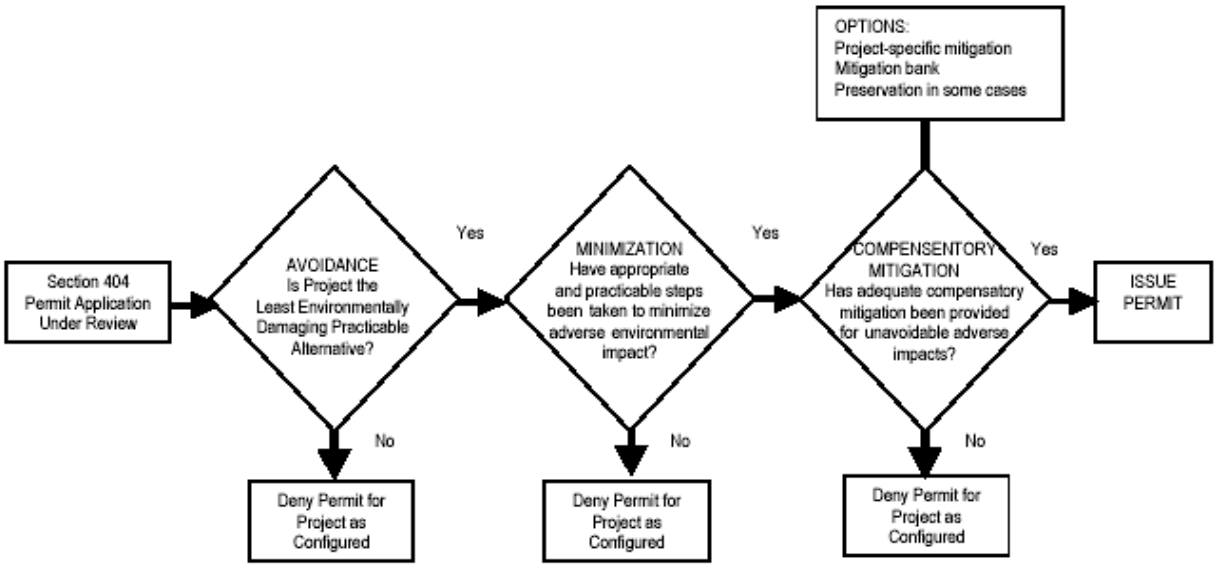

Figure 2
Sequencing of Mitigation Actions

Appendix A – Regional Reservoir Supply Planning and Implementation Process

Mitigation for Unavoidable Impacts to Cultural/Historic/Archeological Resources

As noted above, the SOPs developed by USACE are for impacts to wetlands and streams and do not address mitigation that may be required for impacts to cultural or archeological resources under the NHPA. Appropriate mitigation for impacts to cultural and archeological resources must be developed separately through coordination with USACE and the GHPD. Mitigation options may include:

- Relocating a project to avoid impact on an archeological site, a historic district, or an area of traditional use;
- Reducing the scale or altering the design of a project to reduce visual impacts;
- Restoring impacted sites, landscapes, or buildings;
- Implementing preservation plans and maintenance programs that reduce impacts over time;
- Compensating for impacts, for example by rehabilitating some buildings in exchange for demolishing others, or conducting archeological data recovery;
- Replacing lost plant gathering areas by providing traditional plant gatherers with access to other similar areas; and
- Combining some or all of these options.

Relocation of Sensitive Species

Where practicable, sensitive species that are not able to relocate themselves will be relocated to other areas of suitable habitat. For a water supply reservoir, motile animal species can relocate as the reservoir is filling. However, if caves are present in the proposed reservoir footprint, species that hibernate in caves will not be able to relocate if filling occurs during the hibernation period, and therefore, will be relocated to other areas of suitable habitat, as practicable.

4.3 Facility Design and Construction

Project design and construction is an iterative process requiring significant geologic and engineering planning, including geologic mapping, boreholes, laboratory testing of samples, geotechnical and structural evaluations, water supply water quality and downstream water quality considerations, and design alternative evaluations to reduce environmental impacts. As the mapping and field investigations are completed, the concepts for the design are reviewed and adjusted to fit the site conditions as they are developed. When dealing with natural sites and geologic conditions, the final cost of drilling, geologic mapping, and testing is difficult to estimate at the start of the project. This work is normally done in stages, to provide for changes in the work plans as more information becomes available.

4.3.1 Conceptual, Preliminary, and Final Design

The design approach typically comprises:

- Reconnaissance investigation, in which several potential project locations are identified;
- Identification of preferred site based on further evaluation of the sites deemed potentially suitable in the reconnaissance investigation;
- Conceptual design with feasibility studies to verify the geologic and geotechnical suitability of the preferred site;
- Preliminary-design; and
- Final design

Consideration of minimizing or avoiding environmental impacts is a priority in the final design. The design approach is not initiated unless the water supply needs analysis and analysis of alternatives determine that additional water supplies are needed and that no practicable alternatives, such as conservation and reuse, can meet the projected water needs.

Conceptual Design

The conceptual design process includes development of sufficient preliminary layouts to proceed with the site investigations to gather site-specific information needed to assess the feasibility of the site. In addition, the design is evaluated to assure that the project as conceived complies with all aspects of the RRWSP

planning and implementation process. Site investigations typically include topographic mapping, geological mapping, and drilling and exploration of the subsurface conditions. In the case of a reservoir, the conceptual design includes initial cut and fill calculations, identification of borrow areas, subsurface and laboratory investigations for evaluation of suitable foundations for the dam and appurtenances, and depth to rock (both in borrow areas and in the dam area for stability evaluations). The locations of pump stations and proximity to treatment plants and distribution systems are evaluated and selected for detailed survey and geotechnical investigations. The yield hydrology and flood hydrology are developed concurrently with this work as part the Instream Flow Analysis.

Preliminary Design

The preliminary design will include further evaluation of the site topography, geology, and geotechnical conditions of the site. Detailed stability analysis will be performed using the data developed in the conceptual design. Water quality issues downstream of the project area, such as temperature, dissolved oxygen, and dissolved inorganic constituents, are evaluated to assure that adequate water quality and flow to sustain downstream aquatic integrity are maintained.

In the case of a reservoir, components of the preliminary design phase may include:

- Spillway location, type, capacity and size;
- Outlet works location, size and capacity, along with intake levels controls, conduit size and materials for theses structures;
- Stilling basin design; and
- Construction methods and concepts.

Final Design

Final design will address the detailed aspects of the project, and will include final plans, specifications, and contract documents. In addition, the final design will include an operational and maintenance program to ensure that if future operation of the project is required, this program meets the permitting requirements for minimum instream flow and water quality. The final design reports will be prepared, including a baseline report if necessary. Emergency Action Plans are frequently required depending on the downstream conditions and the potential hazard of the project (for reservoirs, determined by the Safe Dams Program staff).

4.3.2 Control/Elimination of Impacts Related to Construction Runoff

All Section 404 permits are conditioned such that the applicant must comply with the current version of the Georgia Erosion and Sedimentation Control Act. Proper implementation of Best Management Practices (BMPs) required to comply with this act will provide necessary protection of receiving waters by controlling runoff at the source.

Certain sensitive species are more vulnerable to disturbance from construction activities at certain times of year, including during hibernation, nesting/brood rearing, and periods of migration. Proper planning of construction schedules will reduce potential impacts to sensitive species by implementing construction when the species is not present on the site, or when the species is less sensitive to disturbance.

4.4 Management Issues Specific to Reservoirs

In many areas of Georgia, reservoirs are an important tool for assuring adequate water supply for various needs. However, the design, construction, and operation of dams should consider the following issues.

4.4.1 Operational/Design Techniques

The reservoir will be different in physical and chemical conditions than the streams that are inundated. This is an unavoidable impact of constructing a reservoir. However, the degree of eutrophication and the rate of sediment accumulation can be reduced by integrating water supply reservoirs with regional watershed planning that addresses the inputs of nutrients and sediment from the watershed filling the reservoir. Once a reservoir is in place, there is a possibility that water released from the reservoir will be sufficiently different from downstream waters so as to affect a change in communities downstream of the reservoir. Typically, these impacts result from discharge of water that is markedly different from downstream water in temperature and/or dissolved oxygen concentration. Properly designed and operated outflow structures can match temperature and dissolved oxygen characteristics with those of the receiving stream.

4.4.2 Timber Clearing

While some timber clearing in the lake basin may be necessary to ensure reasonable navigational opportunities and satisfactory water quality, it is recommended that plots of standing or "topped" timber be left to provide habitat and cover for fish populations. The GA DNR Wildlife Resources Division recommends that at least one-half acre of hardwoods be retained for every 40 acres of impounded waters. Areas of brush or buoys may be desirable to clearly mark topped timber areas if the timber is not evident at normal water levels. These submerged timber areas tend to attract fish, thereby providing excellent fishing opportunities for anglers.

4.4.3 Timing of Lake Filling

The lake should begin filling in the fall of the year (early October to mid-November) to: (1) promote the establishment of a balanced fish population by reducing the opportunity for late summer spawning of "wild" fish species; (2) minimize oxygen problems which may be caused by the initial flooding of vegetation during the warm summer months; and (3) allow the removal of existing stream fish populations by Wildlife Management Division (WRD) personnel in the lake's watershed if it is desirable and practical to do so.

4.4.4 Environmental Planning Criteria

Development of regional reservoirs also calls for consideration of water supply protection requirements including implementation of the Rules for Environmental Planning Criteria (Chapter 391-3-16) and the creation of a Water Supply Reservoir Management Plan. As noted in Section 2.4, the siting and selection of reservoir locations must take into consideration the ability to implement appropriate buffers and setbacks, and the potential for future protection of the water supply source based on existing and anticipated land use, including the consideration of impervious surfaces. During project implementation, local governments will be required to implement water supply protection measures that may include developing and approving local ordinances, limiting specific land uses, and restricting other potentially hazardous activities in the watershed leading to the reservoir (see Section 2.2). Prohibitions or restrictions on certain recreational uses, such as boat docks, swimming, fishing, and public access, may be required to protect water quality of the reservoir. A water supply protection plan (sometimes referred to as a Low Flow Monitoring Plan), as required by the Safe Drinking Water Act (O.C.G.A 12-5-170), will also be prepared to assure that new water supply reservoirs meet Federal water protection requirements.

4.4.5 Greenspace Program

The GA DNR will evaluate the potential for purchasing additional property during the implementation phase, to help protect the quality of the water supply by providing open areas around the reservoirs and in the upstream watershed. As GA DNR evaluates this aspect of a reservoir project, it will consider whether suitable undeveloped land exists, and whether funding is available to acquire additional property. Such areas, if acquired, will become part of the host County's (or Counties') community greenspace programs, protecting source water quality while offering passive recreational opportunity to the public.

4.4.6 Recreational Facilities

Angler access facilities, walking trails, picnic, and other passive recreational opportunities will be included as part of the reservoir complex to the extent practicable.

Public Access

Public access will be allowed on State-controlled buffer around the shoreline for bank fishing and other recreational activities, as permitted by the Water Supply Reservoir Management Plan (referenced in Section 4.4.4, above). WRD recommends a minimum of 75% shoreline access. In addition, access will be provided to the dam and the immediate tailwater area (where seasonal fisheries will likely occur).

Parking

A minimum of 20 vehicle parking spaces (large enough to park a vehicle with a boat trailer) should be provided, although the exact number should be determined on a site-by-site basis. Special parking for persons with physical disabilities will be included, as appropriate. For reservoirs over 100 surface acres in size, additional parking spaces will be needed.

Fish Stocking

The fisheries section of WRD will be contacted during the fall one year prior to the lake's impoundment, so that biologists can determine whether hatchery fish will be needed to stock the lake and, if necessary, to program sufficient numbers into the production schedule. Management of the fish population will be coordinated with the Fisheries Section of WRD before and after filling of the lake.

Fishing Pier

At least one fishing pier for bank fishermen, including persons with physical disabilities, is recommended. Fishing piers should be located no closer than 200 feet from boat ramp/dock facilities to avoid conflicts, and should be designed and located to permit fishing during all normal operational water elevations. This will probably require a floating pier to accommodate fluctuating water levels. The final plans and construction of the pier should be approved by WRD.

Boat Ramps

At least one double lane boat ramp will be constructed on each lake. The location and number of ramps required will be determined by the size and configuration of the lake, as well as restrictions on gasoline-powered motors. On those lakes that restrict boat motor operation to electric motors only, it may be necessary to construct additional boat ramps. This is because the distance from the ramp to certain areas on a lake can be so far that reaching the area in a reasonable period of time is not feasible with the slower electric motors. For lakes where fishermen are restricted to electric motors, boat ramps should be provided so that no place on the lake is more than 1.5 miles from a ramp. If gasoline-powered motors are allowed, one double-lane boat ramp should suffice for every 500 surface acres of lake. Ramps constructed will be accessible to disabled persons. Each ramp should be located and constructed so that it is usable at all normal operational water elevations. This will mean extending the ramp to well below full pool so that it may still be used during drawdown periods.

Fishing Regulations

It will be necessary to manage the fish populations of these lakes by regulation of harvest, since other standard fisheries practices such as winter drawdowns and the use of chemicals may not be practical or permissible. Regulations for specific reservoirs should be implemented and updated after consultations with WRD fisheries biologists.

Boat Motors

No vessels except boats being propelled by paddles, oars, or electric motors should be operated on lakes less than 99 acres in size. Boats propelled by motors less than 10 horsepower (or motors 10 horsepower and greater that are operated at idle speed) should be allowed on lakes greater than 99 acres in size. GA DNR activities (law enforcement and fish population sampling) will be exempt from any motor size restrictions that may be established.

Passive Wildlife Viewing

Opportunities for passive enjoyment of wildlife will be made possible, as appropriate. In conjunction with the Georgia Natural Heritage Program, focus will be placed on identifying and protecting elements in the vicinity of the reservoir of special concern in Georgia, such as plant or animal species or natural community types that are especially rare or threatened.

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November 1996

THE MODEL PLAN FOR PUBLIC PARTICIPATION

Developed
by the Public Participation
and Accountability Subcommittee
of the National Environmental Justice
Advisory Council

A Federal Advisory Committee to
the U.S. Environmental Protection Agency

Dear Colleagues and Friends:

The National Environmental Justice Advisory Council (NEJAC) considers public participation crucial in ensuring that decisions affecting human health and the environment embrace environmental justice. To facilitate such public participation, the NEJAC requested that its Public Participation and Accountability Subcommittee develop recommendations for methods by which EPA can institutionalize public participation in its environmental programs. In 1994, the Public Participation and Accountability Subcommittee developed the Model Plan for Public Participation. The plan is based on two guiding principles and four critical elements. The NEJAC adopted the model plan as a living document to be reviewed annually and revised as needed.

We are pleased to send you a copy of the Model Plan for Public Participation. We also have enclosed the Core Values for the Practice of Public Participation developed by *Interact: The Journal of Public Participation* and the Environmental Justice Public Participation Checklist developed by the Interagency Working Group on Environmental Justice for use by Federal and State agencies. We invite you to consider the model plan as a tool that will guide the public participation process. Please share this document with others who may be interested in encouraging broader community participation in the environmental decision-making process.

Please forward any written comments to:

NEJAC Public Participation and Accountability Subcommittee
c/o U.S. Environmental Protection Agency
Office of Environmental Justice
401 M Street, SW (Mail Code: 2201A)
Washington, DC 20460
Phone: (202) 564-2515
Hotline: (800) 962-6215
Fax: (202) 501-0740
Internet E-mail: environmental.justice.epa@epamail.epa.gov

Sincerely,

Richard Moore, Chairman
National Environmental Justice
Advisory Council

BACKGROUND

The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee that was established by charter on September 30, 1993, to provide independent advice, consultation, and recommendations to the Administrator of the U.S. Environmental Protection Agency (EPA) on matters related to environmental justice. The NEJAC is made up of 25 members, and one designated federal official (DFO), who serve on a parent council that has six subcommittees—Enforcement, Health and Research, Indigenous Peoples, International, Public Participation and Accountability, and Waste and Facility Siting. Along with the NEJAC members who fill subcommittee posts, an additional 34 individuals serve on the various subcommittees. The NEJAC has held meetings in locations across the United States, including Washington, D.C.; Albuquerque, New Mexico; Herndon, Virginia; Atlanta, Georgia; Arlington, Virginia; and Detroit, Michigan.

As a federal advisory committee, the NEJAC is bound by all requirements of the Federal Advisory Committee Act (FACA) of October 6, 1972. Those requirements include:

- Members must be selected and appointed by EPA
- Members must attend and participate fully in meetings of the NEJAC
- Meetings must be open to the public, except as specified by the Administrator
- All meetings must be announced in the Federal Register
- Public participation must be allowed at all public meetings
- The public must be provided access to materials distributed during the meeting
- Meeting minutes must be kept and made available to the public
- NEJAC must provide independent judgment that is not influenced by special interest groups

Each subcommittee, formed to deal with a specific topic and to facilitate the conduct of the business of the NEJAC, has a DFO and is bound by the requirements of FACA. Subcommittees of the NEJAC meet independently of the full NEJAC and present their findings to the NEJAC for review. Subcommittees cannot make recommendations independently to EPA. In addition to the six subcommittees, the NEJAC has established a Protocol Committee, the members of which are the chair of NEJAC and the chairs of each subcommittee.

EPA's Office of Environmental Justice (OEJ) maintains transcripts, summary reports, and other material distributed during the meetings. Those documents are available to the public upon request.

Comments or questions can be directed to OEJ through the Internet. OEJ's Internet E-mail address is: **environmental.justice.epa@epamail.epa.gov.**

Executive summaries of the reports of the NEJAC meetings are available on the Internet at OEJ's World Wide Web home page: **http://es.inel.gov/oeca/oej.html.**

TABLE OF CONTENTS

GUIDING PRINCIPLES

A. PUBLIC PARTICIPATION

I. Encourage public participation in all aspects of environmental decision making.

Communities, including all types of stakeholders, and agencies should be seen as equal partners in dialogue on environmental justice issues. In order to build successful partnerships, interactions must:

- Encourage active community participation
- Institutionalize public participation
- Recognize community knowledge
- Utilize cross-cultural formats and exchanges

II. Maintain honesty and integrity in the process and articulate goals, expectations, and limitations.

CRITICAL ELEMENTS

A. PREPARATION

I. Developing co-sponsoring and co-planning relationships with community organizations is essential to successful community meetings. To ensure a successful meeting, agencies should provide co-sponsors the resources they need and should share all planning roles. These roles include:

- Decision making
- Development of the agenda
- Establishment of clear goals
- Leadership
- Outreach

II. Educating the community to allow equal participation and provide a means to influence decision making.

III. Regionalizing materials to ensure cultural sensitivity and relevance.

IV. Providing a facilitator who is sensitive and trained in environmental justice issues.

B. PARTICIPANTS

I. As the NEJAC model demonstrates, the following communities should be involved in environmental justice issues:

- Community and neighborhood groups
- Community service organizations (health, welfare, and others)
- Educational institutions and academia
- Environmental organizations
- Government agencies (federal, state, county, local, and tribal)
- Industry and business
- Medical community
- Nongovernment organizations
- Religious communities
- Spiritual communities

II. Identify key stakeholders, including:

- Educational institutions
- Affected communities
- Policy and decision makers (for example, representatives of agencies accountable for environmental justice issues, such as health officials, regulatory and enforcement officials, and social agency staff).

C. LOGISTICS

I. Where:

- The meetings should be accessible to all who wish to attend (public transportation, child care, and access for the disabled should be considered).
- The meeting must be held in an adequate facility (size and conditions must be considered).
- Technologies should be used to allow more effective communication (teleconferences, adequate translation, equipment, and other factors).

II. When:

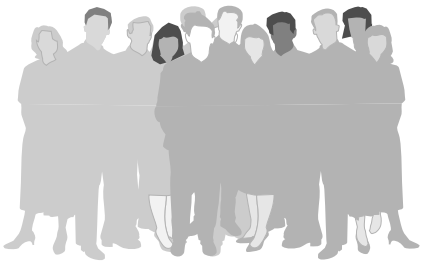
- The time of day and year of the meeting should accommodate the needs of affected communities (evening and weekend meetings accommodate working people, and careful scheduling can avoid conflicts with other community or cultural events).

III. How:

- An atmosphere of equal participation must be created (avoid using a "panel" or "head table").
- A two-day meeting, at a minimum, is suggested. The first day should be reserved for community planning and education.
- The community and the government should share leadership and presentation assignments.

D. MECHANICS

- Maintain clear goals by referring to the agenda; however, do not be bound by it.
- Incorporate cross-cultural exchanges in the presentation of information and the meeting agenda.
- Provide a professional facilitator who is sensitive to, and trained in, environmental justice issues.
- Provide a timeline that describes how the meeting fits into the overall agenda of the issues at hand.
- Coordinate follow-up by developing an action plan and determining who is the contact person who will expedite the work products from the meeting.
- Distribute minutes and a list of action items to facilitate follow-up.



CORE VALUES FOR THE PRACTICE OF PUBLIC PARTICIPATION

1. People should have a say in decisions about actions which affect their lives.

2. Public participation includes the promise that the public's contribution will influence the decision.

3. The public participation process communicates the interests and meets the process needs of all participants.

4. The public participation process seeks out and facilitates the involvement of those potentially affected.

5. The public participation process involves participants in defining how they participate.

6. The public participation process communicates to participants how their input was, or was not, utilized.

7. The public participation process provides participants with the information they need to participate in a meaningful way.

Source: *Interact: The Journal of Public Participation,* Volume 2, Number 1, Spring 1996. *Interact* is published by the International Association of Public Participation Practitioners, a non-profit corporation established in 1990 to serve practitioners throughout the world seeking practical experience designing and conducting public involvement programs.

ENVIRONMENTAL JUSTICE PUBLIC PARTICIPATION CHECKLIST FOR GOVERNMENT AGENCIES

Please note that this checklist was developed by Federal agencies for use by Federal and State agencies. It serves as an example of a process to be followed and does not include regulatory requirements. Please contact the U.S. Environmental Protection Agency Office of Environmental Justice for more information about the public participation process, within the regulatory framework.

1. Ensure that the Agency's public participation policies are consistent with the requirements of the Freedom of Information Act, the Emergency Planning and Community Right to Know Act and the National Environmental Policy Act.

2. Obtain the support of senior management to ensure that the Agency's policies and activities are modified to ensure early, effective and meaningful public participation, especially with regard to Environmental Justice stakeholders. Identify internal stakeholders and establish partnering relationships.

3. Use the following Guiding Principles in setting up all public meetings:
   - Maintain honesty and integrity throughout the process
   - Recognize community and indigenous knowledge
   - Encourage active community participation
   - Utilize cross-cultural formats and exchanges

4. Identify external Environmental Justice stakeholders and provide opportunities to offer input into decisions that may impact their health, property values and lifestyles. Consider at a minimum individuals from the following organizations as appropriate:
   - Environmental organizations
   - Business and trade organizations
   - Civic/public interest groups
   - Grassroots/community-based organizations
   - Congress
   - Federal agencies
   - Homeowner and resident organizations
   - International organizations
   - Labor unions
   - Local and State government
   - Media/Press
   - Indigenous people
   - Tribal governments
   - Industry
   - White House
   - Religious groups
   - Universities and schools

5. Identify key individuals who can represent various stakeholder interests. Learn as much as possible about stakeholders and their concerns through personal consultation, phone or written contacts. Ensure that information-gathering techniques include modifications for minority and low-income communities (for example, consider language and cultural barriers, technical background, literacy, access to respondents, privacy issues and preferred types of communications).

6. Solicit stakeholder involvement early in the policy-making process, beginning in the planning and development stages and continuing through implementation and oversight.

7. Develop co-sponsoring/co-planning relationships with community organizations, providing resources for their needs.

8. Establish a central point of contact within the Federal agency to assist in information dissemination, resolve problems and to serve as a visible and accessible advocate of the public's right to know about issues that affect health or environment.

9. Regionalize materials to ensure cultural sensitivity and relevance. Make information readily accessible (for example, access for the handicapped and sight- and hearing-impaired) and understandable. Unabridged documents should be placed in repositories. Executive summaries/fact sheets should be prepared in layman's language. Whenever practicable and appropriate, translate targeted documents for limited English-speaking population.

10. Make information available in a timely manner. Environmental Justice stakeholders should be viewed as full partners and Agency customers. They should be provided with information at the same time it is submitted for formal review to State, Tribal and/or Federal regulatory agencies.

11. Ensure that personnel at all levels in the Agency clearly understand policies for transmitting information to Environmental Justice stakeholders in a timely, accessible and understandable fashion.

12. Establish site-specific community advisory boards where there is sufficient and sustained interest. To determine whether there is sufficient and sustained interest, at a minimum, review correspondence files, review media coverage, conduct interviews with local community members and advertise in local newspapers. Ensure that the community representation includes all aspects and diversity of the population. Organize a member selection panel. Solicit nominations from the community. Consider providing administrative and technical support to the community advisory board.

13. Schedule meetings and/or public hearings to make them accessible and user-friendly for Environmental Justice stakeholders. Consider time frames that do not conflict with work schedules, rush hours, dinner hours and other community commitments that may decrease attendance. Consider locations and facilities that are local, convenient and represent neutral turf. Ensure that the facility meets American with Disabilities Act Statements about equal access. Provide assistance for hearing-impaired individuals. Whenever practical and appropriate, provide translators for limited-English speaking communities. Advertise the meeting and its proposed agenda in a timely manner in the print and electronic media. Provide a phone number and/or address for communities to find out about pending meetings, issues, enter concerns or to seek participation or alter meetings agendas.

14. Consider other vehicles to increase participation of Environmental Justice stakeholders including:
    - Posters and Exhibits
    - Participation in Civic and Community Activities
    - Public Database and Bulletin Boards
    - Surveys
    - Telephone Hotlines
    - Training and Education Programs, Workshops and Materials

15. Be sure that trainers have a good understanding of the subject matter both technical and administrative. The trainers are the Ambassadors of this program. If they don't understand — no one will.

16. Diversity in the workplace: whenever practical be sure that those individuals that are the decision makers reflect the intent of the Executive Order and come from diverse backgrounds, especially those of a community the Agency will have extensive interaction with.

17. After holding a public forum in a community, establish a procedure to follow up with concrete action to address the communities' concerns. This will help to establish credibility for your Agency as having an active role in the Federal government.

18. Promote interagency coordination to ensure that the most far reaching aspects of environmental justice are sufficiently addressed in a timely manner. Environmental problems do not occur along departmental lines. Therefore, solutions require many agencies and other stakeholders to work together efficiently and effectively.

19. Educate stakeholders about all aspects of environmental justice (functions, roles, jurisdiction, structure and enforcement).

20. Ensure that research projects identify environmental justice issues and needs in communities, and how to meet those needs through the responsible agencies.

21. Establish interagency working groups (at all levels) to address and coordinate issues of environmental justice.

22. Provide information to communities about the government's role as it pertains to short-term and long-term economic and environmental needs and health effects.

23. Train staff to support inter-and intra-Agency coordination, and make them aware of the resources needed for such coordination.

24. Provide Agency staff who are trained in cultural, linguistic and community outreach techniques.

25. Hold workshops, seminars and other meetings to develop partnerships between agencies, workers and community groups. (Ensure mechanisms are in place to ensure that partnerships can be implemented via cooperative agreements, etc.)

- [x] 26. Provide effective outreach, education and communications. Findings should be shared with community members, with an emphasis on being sensitive and respectful to race, ethnicity, gender, language, and culture.

- [x] 27. Design and implement educational efforts tailored to specific communities and problems. Increase the involvement of ethnic caucuses, religious groups, the press, and legislative staff in resolution of Environmental Justice issues.

- [x] 28. Assure active participation of affected communities in the decision-making process for outreach, education, training and community programs -- including representation on advisory councils and review committees.

- [x] 29. Encourage Federal and State governments to "reinvent government" -- overhaul the bureaucratic in favor of community responsive.

- [x] 30. Link environmental issues to local economic issues to increase level of interest.

- [x] 31. Use local businesses for environmental cleanup or other related activities.

- [x] 32. Utilize, as appropriate, historically Black Colleges and Universities (HBCU) and Minority Institutes (MI), Hispanic Serving Colleges and Universities (HSCU) and Indian Centers to network and form community links that they can provide.

- [x] 33. Utilize, as appropriate, local expertise for technical and science reviews.

- [x] 34. Previous to conducting the first Agency meeting, form an agenda with the assistance of community and Agency representatives.

- [x] 35. Provide "open microphone" format during meetings to allow community members to ask questions and identify issues from the community.

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"Improving Dialogue with Communities: A Short Guide for Government Risk Communications," September 1991, Environmental Communications Research Program, New Jersey Agricultural Experiment Station, Cook College, Rutgers University.

NOTES

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U.S. Environmental Protection Agency

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Office of Environmental Justice
U.S. Environmental Protection Agency

In Memoriam
Jean Sindab
National Council of Churches

The *Model Plan for Public Participation* was prepared by representatives of the NEJAC Public Participation and Accountability Subcommittee and the U.S. EPA Office of Environmental Justice. The document is published by the Office of Environmental Justice and is endorsed by the NEJAC. This document is published as a living document that will be reviewed annually and revised as necessary. Comments should be sent to the address below.

U. S. Environmental Protection Agency
Office of Environmental Justice
401 M Street, SW (Mail Code: 2201A)
Washington, DC 20460
(202)564-2515

U.S. ARMY CORPS OF ENGINEERS ALTERNATIVES ANALYSIS GUIDANCE FOR REGIONAL WATER SUPPLY RESERVOIRS

A. AVOIDANCE ALTERNATIVES:

1. No Action: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Should include impacts that would not occur as well as those that would occur, both environmental and social.

2. Water Conservation: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Also state whether all or a portion of needs could be met with this alternative. Discuss state requirements for such plans and county or city's existing water conservation measures. Indicate current saving due to measures already implemented and potential savings if further measures were taken. Will the new measures be implemented?

3. Recycle and Reuse of Wastewater: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Also state whether all or a portion of needs could be met with this alternative. Discuss issues such as amount available, cost to treat, etc. Are you currently doing this? If so, what water savings were produced? What is the potential for increasing recycling of wastewater? How much additional savings could be generated? Do you plan to do this?

4. Groundwater: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Any data concerning amount of yield that could be obtained through groundwater and cost of constructing a ground water system should be addressed. Also potential for wells to be contaminated/costs of treatment.

5. Purchase of Water from an existing or proposed Regional Source: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Also state whether all or a portion of needs could be met with this alternative. Discuss issues such as amount available, costs, reliability, etc.

6. Request Increase Withdrawal at Existing Intake Site: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Also state whether all or a portion of needs could be met with this alternative. Discuss issues such as amount available, costs, reliability, etc.

7. Upland Constructed Flow Augmentation Reservoir: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Also state whether all or a portion of needs could be met with this alternative. Discuss issues such as amount available, costs, reliability, etc.

B. SURFACE WATER SUPPLY ALTERNATIVES:

1. Traditional Reservoir (no pumped storage): This alternative would result in a reservoir being built either on a stream or a river system to store water to supply the applicant's and their

customers needs. State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Impacts should be compared to proposed project and other alternatives. Issues such as differences in impacts to stream flows, aquatic life movements, water quality impacts, etc must be addressed. Would you require a larger pool than a pump storage reservoir? If so, how much bigger and how much increase in impacts. Cost comparisons with other alternatives must include mitigation costs.

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION AND A 30/60/40% MEAN ANNUAL FLOW OPTION (FOR RESERVOIRS) AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

2. Construction of Several Reservoirs: This alternative would allow the applicant as well as each of its customers to construct their own reservoirs. This alternative would likely result in smaller impacts per reservoir; however, overall it is likely that the cumulative total impacts of all the reservoirs ……..(compare to proposed project and other alternatives). Also discuss costs and ability to construct a treatment system for such a project. Cost comparisons with other alternatives must include mitigation costs. State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed SUGGEST THIS BE SERIOUSLY DISCUSSED IF PREFERRED ALTERNATIVE IS A RESERVOIR) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION AND A 30/60/40% MEAN ANNUAL FLOW OPTION (FOR RESERVOIRS) AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

3a. River or Stream Intake System (no storage reservoir): This alternative would consist of construction of water intake lines on a stream or river large enough to provide the volume of water needed by the applicant. State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Address whether you have a viable alternative source and impacts this would have on source water compared to proposed alternative and all other alternatives. Cost comparisons with other alternatives must include mitigation costs. Could you get water during moderate and low flows? Discuss reliability of water source and cost of constructing system. What if our users come on line in the same system?

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION AND A 30%

MEAN ANNUAL FLOW OPTION AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

3b. River or Stream Intake with One Storage Reservoir : Utilize a stream as the supply source and a storage reservoir that would augment the water supplied by the stream during drought conditions, when stream withdrawal would be curtailed. Such a system can operate in several ways (describe ways). State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Cost comparisons with other alternatives must include mitigation costs.

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION; A 30/60/40% MEAN ANNUAL FLOW OPTION (FOR RESERVOIRS) AND A 30% MEAN ANNUAL FLOW OPTION (FOR DIRECT INTAKE) AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

4. Construction of Several Intakes with Storage Reservoirs: This alternative would involve construction of several reservoirs with stream or river intakes. State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Cost comparisons with other alternatives must include mitigation costs.

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION; A 30/60/40% MEAN ANNUAL FLOW OPTION (FOR RESERVOIRS) AND A 30% MEAN ANNUAL FLOW OPTION (FOR DIRECT INTAKE) AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

5. Increase Size/Yield of Existing Reservoir: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need. Cost comparisons with other alternatives must include mitigation costs.

DESCRIBE SITES INVESTIGATED AND CRITERIA USED IN EVALUATION. FOR COST COMPARISON'S MAKE SURE PROJECT COST INCLUDES MITIGATION COSTS (No need for this part if discussion shows that this alternative would not meet purpose and need or would have substantially more impact than the project proposed regardless of where or how constructed) MUST HAVE THIS PART FOR PREFERRED ALTERNATIVE AND NEED TO COMPARE BASED ON A MONTHLY 7Q10 MINIMUM FLOW OPTION AND A 30/60/40% MEAN ANNUAL FLOW OPTION (FOR RESERVOIRS) AS DESCRIBED IN DNR INTERIM MINIMUM STREAM FLOW PROTECTION POLICY.

C. MINIMIZATION ALTERNATIVES:

1. Combine Water Conservation With Applicant's Proposal: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

2. Combine Groundwater Use With Applicant's Proposal: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

3. Reduce the Size of the Reservoir For Applicant's Proposal: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

4. Continue Use of Existing Water System with Construction of a Smaller Reservoir: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

5. Combine Waste Water Flow Augmentation with River Intake: State the impacts of this alternative, both positive and negative and whether this alternative would meet your basic purpose and need.

D. CONCLUSION: Detailed discussion of all practicable alternatives that would meet the project purpose and need. State conclusions and preferred alternative. Should include a matrix that indicates evaluation criteria, potential impacts, cost (including mitigation costs), yield, etc for each alternative considered in detail.